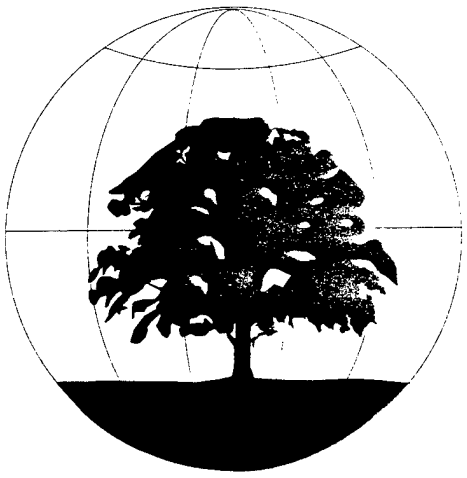


3D/Environmental

A 3D/International Group

C7322.19

6 August 1996

Environmental Fate of Fog Oil at Fort McClellan, Alabama

Submitted to:

Kansas City District
United States Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106

Submitted by:

Harland Bartholomew and Associates, Inc
400 Woods Mill Road South, Suite 330
Chesterfield, Missouri 63017

Prepared by:

3D/International Inc., Environmental Group
781 Neeb Road
Cincinnati, Ohio 45233

Table Of Contents

List of Tables

List of Figures

Section 1.0

Introduction

A study of fog oil was initiated at Fort McClellan, Alabama in August, 1995. This study assessed the environmental fate of fog oil in areas where fog oil smoke production had occurred chronically (over 10 years). This study was conducted as part of the "Biological Assessment: Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri" (3D/Environmental 1996).

The proposed Base Realignment and Closure (BRAC) action will involve moving the U.S. Army Chemical and Military Police schools from Fort McClellan, Alabama to Fort Leonard Wood, Missouri. A major component of this BRAC action is introduction of fog oil smoke training to Fort Leonard Wood. Because the BRAC action may affect the human environment, an Environmental Impact Statement (EIS) was prepared. Potential impacts to endangered and threatened species were assessed in a Biological Assessment (BA).

Two federally endangered species, Indiana bats (*Myotis sodalis*) and gray bats (*Myotis grisescens*), and one threatened species, the bald eagle (*Haliaeetus leucocephalus*) occur on Fort Leonard Wood. These species are protected under the Endangered Species Act (ESA) (Public Law 93-205).

Samples were obtained from 3 locations (exposure sites) where fog oil smoke training has occurred since the 1980's: Range 24 A, Range 56, and Battle Drill Area. The

type and amount of fog oil smoke training varies at each site. We also selected a reference or control site at Choccolocco Creek.

We selected a reference site at a location where fog oil smoke training had not occurred. We were limited in choices of possible reference sites at Fort McClellan because most of Fort McClellan's water systems have been impacted from fog oil training and we needed a reference site with aquatic habitat. The Choccolocco Creek reference site is outside Fort McClellan's boundary, but is on land leased by the installation from the State of Alabama's Forestry Office.

We sampled surface water, soil, sediment, and biota tissue to determine the persistence of fog oil in the environment, and to determine whether fog oil bioaccumulates. We looked at fog oil hydrocarbons in tissue of 3 trophic levels of the terrestrial ecosystem: primary producers (plants), primary consumers (insects), and secondary consumers (bats). We also collected fish (a prey item of bald eagles) and analyzed their tissue for fog oil constituents.

A second study was initiated in October 1995. This study involved collecting samples of fog oil smoke from M56 and M157 generators to determine the chemical composition of fog oil smoke. Several studies have reported volatile or semi-volatile organic compounds form in fog oil smoke as it leaves generators. These studies also indicate some thermal decomposition occurs as well as chemical changes in fog oil smoke. Samples of fog oil collected in October 1995 were examined for volatiles, semi-volatiles, and thermal decomposition products. We used these analyses to identify the potential contribution of fog oil to chemicals identified in water, soil, sediment, and biota tissue samples. We were able to determine how fog oil chemically changes after passing through the generator and condensing into smoke.

Fog oil has had several designations in its history which may lead to confusion. There are two types of fog oil, "old" fog oil and "new" fog oil. Fog oil also has letter designations used by the military for purchasing or issuing requests for production from manufacturers. Types A and B are "old" fog oil (also referred to as SGF 1) that were manufactured under specifications A and B before 1986. "New" fog oil, designated as

types C, D, or E, is also referred to as SGF 2 fog oil (Standard Grade Fuel 2). It is the primary material currently used to produce smoke at Fort McClellan and other installations. Fog oil type D is currently used at Fort McClellan, Alabama. Fog oil type D or E will be used at Fort Leonard Wood. Fog oil types C, D, and E are chemically and structurally the same compounds. Different types of fog oil are defined by requirements and specifications given to manufacturers.

Results from both studies were used in design and development of toxicological studies for the Fort Leonard Wood BRAC Biological Assessment and Ecological Risk Assessments. While the type of fog oil used at the two installations may be different, environmental behavior of fog oil at Fort McClellan will have useful applications to Fort Leonard Wood. Old fog oil that was used at Fort McClellan had high concentrations of aromatic hydrocarbons not found in new fog oil. These aromatic hydrocarbons are the most likely component of fog oil to be retained in the environment. Our analysis of fog oil smoke detected aromatic hydrocarbons and paraffinic hydrocarbon. If none of the hydrocarbons in old fog oil are present in samples taken from Fort McClellan, it is likely no fog oil hydrocarbons will be retained in the environment at Fort Leonard Wood.

Samples from exposure sites and the reference site were analyzed for fog oil hydrocarbons and one chlorinated hydrocarbon. Hexachloroethane (HC) is another obscurant used extensively at exposure sites. HC is a chlorinated hydrocarbon that has a long environmental residence time. In order to insure hydrocarbons detected in samples from exposure sites were from fog oil and not HC, we included HC in our analysis.

Section 2.0

Objectives

This study was performed to determine the following:

- Do constituents of fog oil bioaccumulate in plant, insect, bat, or fish tissues in areas where fog oil smoke training has been conducted for at least 10 years?
- Does fog oil used at Fort McClellan remain in soil, water, or sediment long enough to be detected in media samples?
- Does fog oil migrate vertically into the soil in concentrations large enough to be detected?
- What volatile and semi-volatile compounds are formed in fog oil smoke after it is released from M56 and M157 generators?
- What percentage of type D or E (hydrotreated) fog oil is aromatic?

Section 3.0

Site Description

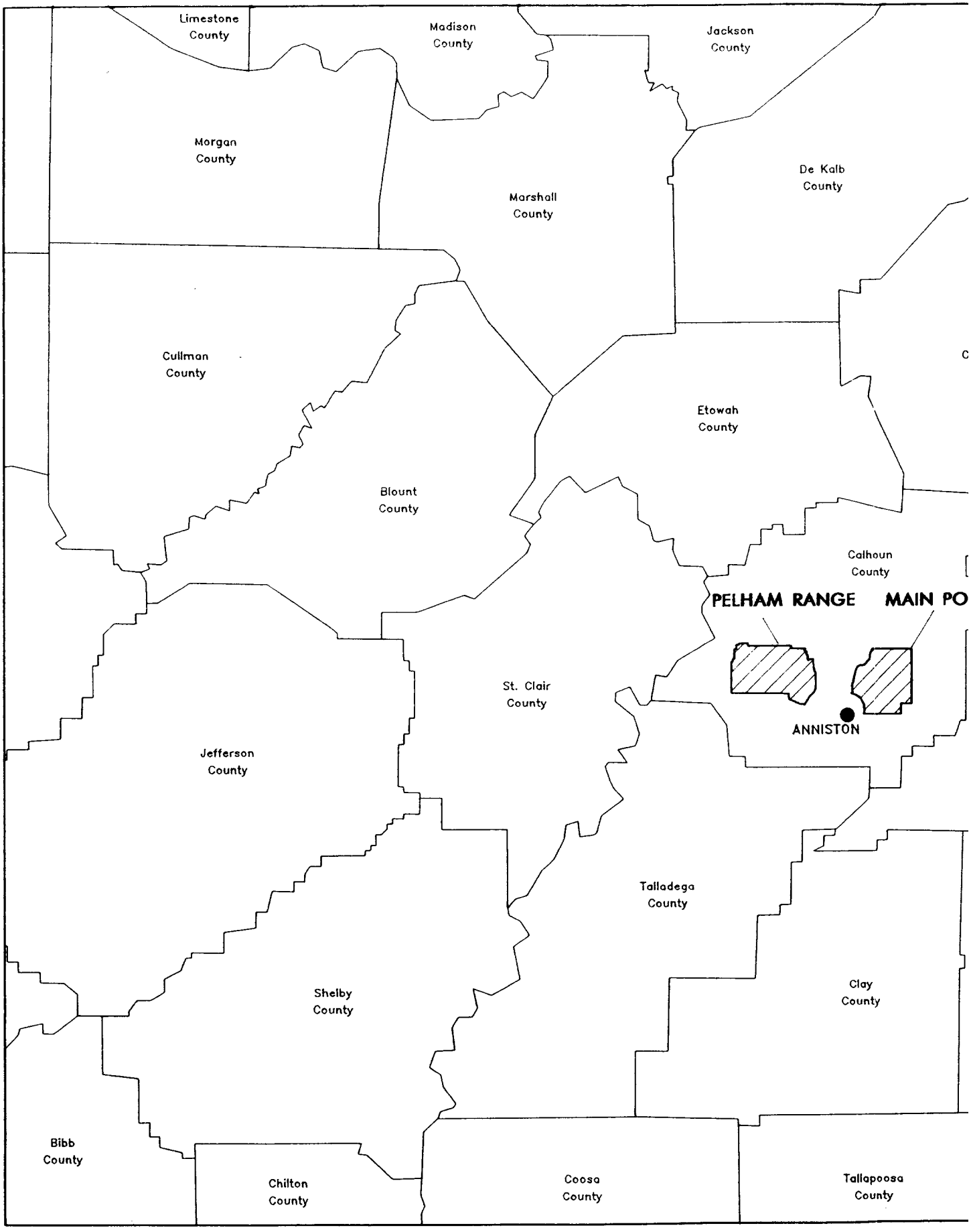
3.1 FORT McCLELLAN

3.1.1 Geomorphology

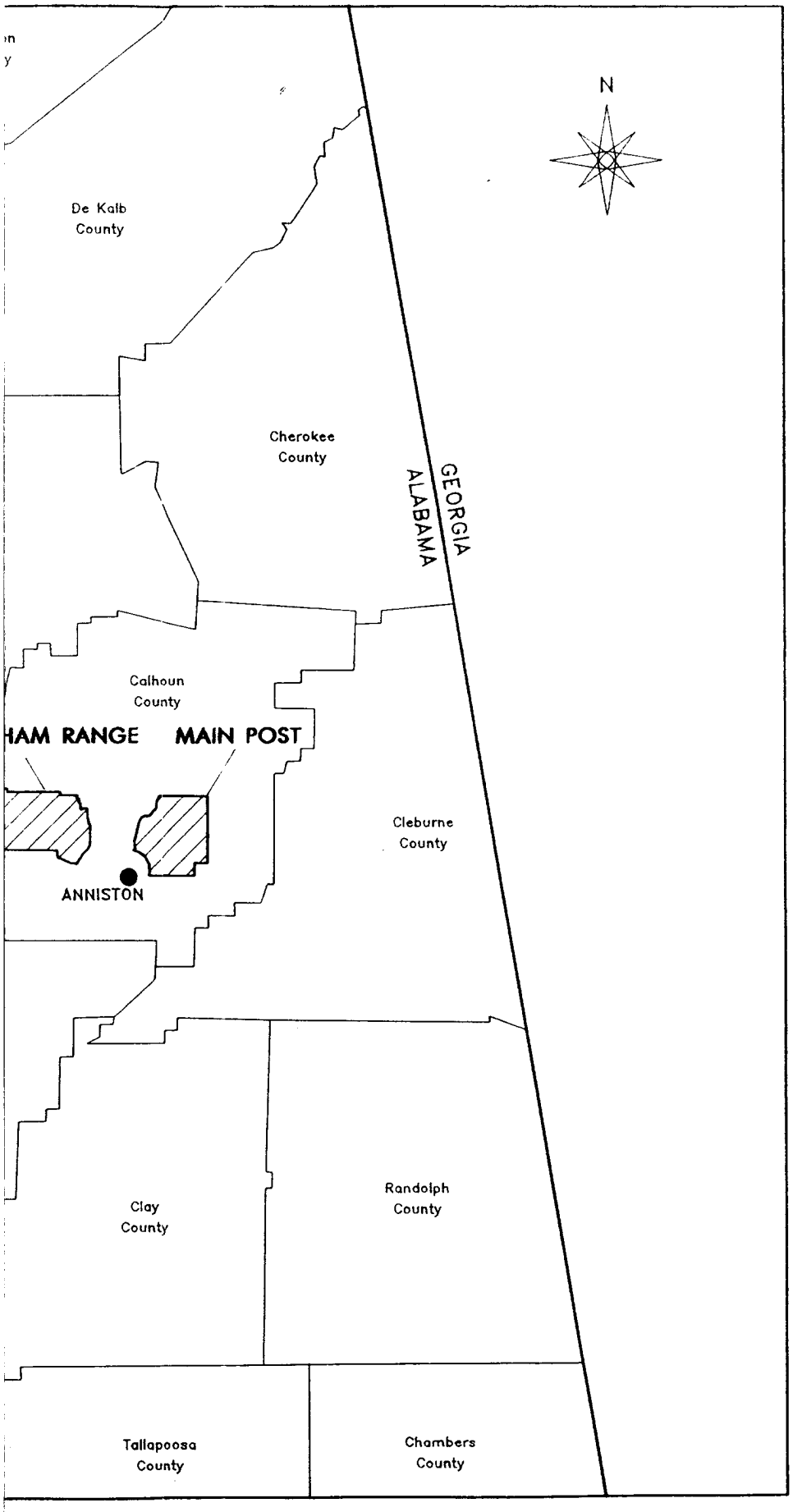
Fort McClellan is located in Calhoun County within the Ridge and Valley Provinces of the Appalachian Highlands (Figure 1). Rock within the Ridge and Valley Province is folded and faulted. The province displays many geomorphic ridges and valleys, of alternating strong and weak strata. Streams in these valleys and ridges have trellis drainage systems. Summits on the ridges may represent former erosion surfaces, and hundreds of gaps which are indicative of innumerable past cases of stream diversion (Thornbury 1965).

The province is an assemblage of valleys surrounded by narrow, linear ridges. The eastern part of the province is predominately valley and not crossed by a single transverse ridge. The western part is characterized by linear sandstone ridges separated by limestone and shale valleys (Thornbury 1965).

1


Limestone County
Madison County
Jackson County
Morgan County
Marshall County
De Kalb County
Cullman County
Etowah County
Blount County
Calhoun County
PELHAM RANGE
MAIN PO
St. Clair County
ANNISTON
Jefferson County
Talladega County
Shelby County
Clay County
Bibb County
Chilton County
Coosa County
Tallapoosa County

(2)



ENVIRONMENTAL FATE OF FOG OIL AT FORT McCLELLAN, ALABAMA

FIGURE 1. Location of Fort McClellan, Alabama.

Fort McClellan

Kilometers

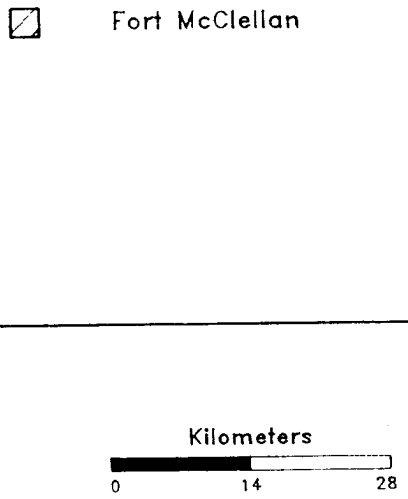
0 14 28

3D/ENVIRONMENTAL

(3)

ENVIRONMENTAL FATE OF FOG OIL
AT FORT McCLELLAN, ALABAMA

FIGURE 1. Location of Fort McClellan, Alabama.



3D/ENVIRONMENTAL

The Ridge and Valley Province is divided into 3 sections: northern, middle, and southern. Calhoun County lies within the southern section. The southern section has numerous thrust faults with homoclinal ridge characteristics and longitudinal drainages (Thornbury 1965).

There are 19 known caves in the Calhoun County. The names of the caves are included here with a brief description of their major features (Table 1).

Folded and faulted Precambrian and Pennsylvanian rocks are the predominant geologic structural features of the Fort McClellan area. These rocks have folded into sharp northeastward-tending synclines and anticlines as well as thrust faults.

The Main Post is characterized by the Weisner Formation, composed of shale, siltstone, sandstone, quartzite, and conglomerate. Outcrops of the formation form hills or mountains. Quartzite and conglomerate form ledges along the side of the Choccolocco Mountain (Ebasco Environmental 1994). Choccolocco Mountain borders the eastern side of Main Post.

Pelham Range is underlain by Cambrian dolomites and has rolling topography with moderate relief. The Cheputepec, Copper Ridge, and Ketona dolomite formations occur under the area. The northwestern portion of Pelham Range is unique, where dolomite contacts the anticlines and synclines of the Conasauga formation. Chert is quite abundant in these formations (Ebasco Environmental 1994).

3.1.2 Soils

Calhoun County, Alabama has 4 major geologic sections: rough mountains, intermediate ridges, lower ridges, and valleys (Thornbury 1965). The parent materials within these sections are different, and important in describing soils types and formations within the county.

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Wilson Cave	Rock Type: Ft. Payne Chert Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: 27 feet
Erby Cave	Rock Type: Conasauga Limestone Type of Entrance: crawl Length of Cave: 91 feet Depth of Cave: single level
Baswell Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: single level
Maxwellborn Cave	Rock Type: Conasauga Limestone Type of Entrance: crawl Length of Cave: 30 feet Depth of Cave: single level
Oxford Cave	Rock Type: Conasauga Limestone Type of Entrance: --- Length of Cave: 912 feet Depth of Cave: single level
Cedar Mountain Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 304 feet Depth of Cave: 27 feet
Daugette No. 1 Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 1074 feet Depth of Cave: 121 feet

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Daugette No. 2 Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 91 feet Depth of Cave: single level
Greens Creek Mountain Cave	Rock Type: Limestone Type of Entrance: crawl Length of Cave: 30 feet Depth of Cave: single level
Green Valley Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 1400 feet Depth of Cave: 27 feet
Short Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: 27 feet
Lin and Randy's Pit	Rock Type: Limestone Type of Entrance: walk in Length of Cave: 91 feet Depth of Cave: 33 feet
Robertson Cave	Rock: Ft. Payne Chert Type of Entrance: Stoopaway Length of cave: 300 feet Depth of cave: 27 feet
Wright's Cave	Rock Type: Ft. Payne Chert Type of Entrance: stoopaway, crawl Length of Cave: 30 feet Depth of Cave: 21 feet

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Weaver Cave	Rock Type: Conasauga Limestone Type of Entrance: walk in, vertical pit Length of Cave: 1611 feet Depth of Cave: 27 feet
Lady Cave	Rock Type: Conasouga Limestone Type of Entrance: Horizontal artificial tunnel, vertical artificial opening Length of Cave: 304 feet Depth of Cave: 27 feet
Little Weaver Cave	Rock Type: Conasauga Limestone Type of Entrance: walk in Length of Cave: 699 feet Depth of Cave: single level
Miller's Cave	Rock Type: Copper Ridge Formation Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: single level
Meadows Cave	Rock Type: Ft. Payne Chert Type of Entrance: horizontal 20+ feet Length of Cave: 480 feet Depth of Cave: 27 feet

There are 6 soil associations within Calhoun County. One soil association is moderately well drained and is found in level to steep terraces. The soils in this group include Altavista, Masada, and Tate. Altavista and Masada soils developed from old general alluvium washed from Talladega slate containing some shale and sandstone. Tate soils developed from alluvium originating as Talladega slate, mica schist, and phyllite. Minor soils are Georgeville, Purdy, Robertsville, Philo, and Atkins (Harlin et al. 1961).

Another general soil association consists of deep, well-drained, level to moderately steep soils in valleys underlain by limestone and shale. Major soils within this association are Anniston, Allen, Decatur, and Cumberland. This soil association is located in the Alexandria and Choccolocco Valleys near Piedmont. Anniston and Allen soils have developed from old local alluvium washed from sandstone and shale. They occur on foot slopes of Choccolocco Mountains. Decatur and Cumberland soils have developed in thick beds of old general alluvium, or in residuum from limestone. Minor soils that occur within this association are Dewey, Etowah, Captina, Taft, and Robinson. These soils developed on uplands or stream terraces. Other minor soils are Huntington, Lindside, Philo, and Melvin.

The third general soil association consists of well drained to moderately well drained, stony or cherty soils on ridgetops, on steep slopes, and in local alluvium on foot slopes or in draws. The dominant soils are the Clarksville and Fullerton soils which formed from the residuum of cherty limestone. Minor soils are Landisburg, Lobelville, and Lee.

The fourth general soil association consists of moderately deep or shallow soils on ridgetops and steep slopes, and in local alluvium in draws. Major soils within this association are Rarden, Montevallo, and Lehew. These soils developed from residuum of shale and fine-grained, platy sandstone or limestone. Rarden soils are moderately well-drained and the Montevallo and Lehew are well drained. Minor soils are Camp and Enders, Cane, Locust, and Atkins.

The fifth soil association consists of well drained soils on stream terraces underlain by sand, gravel, and clay. The major soils are Sequatchie, Holston, and Nolichucky. These soils are well drained, and developed from thick beds of general alluvium washed from

sandstone and shale. Sequatchie soils are found in lower stream terraces. Holston soils are found in slightly higher terraces. Nolichucky soils are on steeper slopes. Minor soils occurring within this association are Montevallo, Pope, Philo, and Atkins.

Another soil association is made up of shallow, steep, and stony soils underlain by sandstone, limestone and Talladega slate. The major soil mapping units are Stony rough lands. This association occurs on broad steep uplands dissected by steep-walled drains. The largest association is located on the Choccolocco and Coldwater Mountains that lie near Anniston. The dominant land types in this association are Stony rough land, limestone; Stony rough land, sandstone; and Stony rough land, slate. Stony rough land, limestone consists of soil material and fragments of limestone. Stony rough land slate is mainly soil material and fragments of slate and quartz ranging from 3 inches to more than 4 feet in diameter. This association is mainly on the north slope of the Talladega Mountains. Minor soils include well-drained Linker and Muskingum, Jefferson, Anniston, and Allen soils (Harlin et al. 1961).

Of the 6 soil associations occurring in Calhoun County, 5 of them occur on the installation. The Attavista-Masada-Tate, Anniston-Allen-Decatur-Cumberland, Clarkston-Fullerton, Rarden-Montevallo-Lehew, and Stony rough land (Harlin et al. 1961).

3.1.3 Groundwater

There are several large ground water reservoirs in Calhoun County formed by thrust fault zones typical of the area (Ebasco Environmental 1994). Outcrop areas from the Knox Group and Weisner Formation are recharge areas for Coldwater Spring. Coldwater Spring receives groundwater recharge from fractured and weathered zones in the Chilowewe Group, solution cavities and channels in the Shady Dolomite, Conasauga Formation, and the Knox Group formations (Ebasco Environmental 1994).

Installation groundwater moves southward along the eastern side of the Choccolocco Mountains and then southwesterly at the southern end of the mountains. Under the cantonment area and Pelham Range, groundwater moves in a west-northwesterly direction toward the Coosa River (Ebasco Environmental 1994).

3.1.4 Surface Water

Calhoun County is drained by the Coosa River and its tributaries. Coosa River flows southwesterly and forms the western boundary of Calhoun County. Terrapin Creek, a tributary to the Coosa River, flows across the northeastern part of the county and furnishes water for the city of Piedmont. Nances Creek drains the area around Piedmont. Choccolocco and Coldwater creeks drain the eastern and southern parts of the county. Ohatchee, Tallahatchee, and Cane creeks are tributaries of the Coosa River (Harlin et al. 1965).

Cane Creek is the major drainage at Fort McClellan (Figure 3). Cane Creek flows east to west through Main Post and Pelham Range with headwaters from Choccolocco Mountain. Dothard Creek is another primary creek found in the cantonment area with headwaters located on and off the installation. Choccolocco Creek flows north to south and originates in the Choccolocco Mountain Corridor. Cane Creek, Cave Creek, and Dothard Creek, eventually flow into the Coosa River. (Ebasco Environmental 1994)

There are many named and unnamed ponds and lakes on the installation. Surface area of ponds and lakes on the installation totals 59 acres. Ponds and lakes in the cantonment area include Yahou Lake, Reily Lake, Cappington Ridge Lake, Duck Pond, Lake Contreras, Cane Creek Lake, Willet Springs, and Blue Hole (Ebasco Environmental 1994)

3.1.5 Climate/Atmosphere

The climate of Calhoun County, Alabama is humid, warm, and temperate, characteristic of the southern United States. It is characterized by long, hot summers and short, mild winters. The average annual temperature is 63°F. Summer temperatures can reach up to 100°F, however temperatures at or around 90°F are more common. During the winter, freezing temperatures are common, but short lived. Severe droughts and measurable snows are uncommon. Average rainfall is 53 inches while the annual snowfall accumulation is 0.5 to 1 inch. Winds are rarely strong, and frequently blow down Coosa Valley from the northeast (NOAA 1978).

3.1.6 Natural Resources

Calhoun County, Alabama falls within the Oak-Pine Forest Region of the United States. This region is characterized by the dominance of oaks and pines over much of the area. Deciduous hardwoods replace pines in typical vegetative succession in the area. Fort McClellan is within the Gulf Slope section of the Oak-Pine Forest Region.

The Gulf Slope section is in several physiographic regions and displays considerable topographic, soil, and vegetational diversity. Specifically, Fort McClellan is within the Coosa Valley, where longleaf pine occurs over 2000 feet above sea level. This Coosa Valley is a transitional region between central hardwood forest and southern evergreen forest.

Alabama occupies a central position in the Gulf Slope section. Vegetational features are diverse. Fort McClellan is within the Coosa Valley region where the transition of the oak communities of the Oak-Chestnut region to the Oak-Pine Region is gradual. Fertile valley lands are under cultivation. An increase in the amount of loblolly pine is apparent on the hills and ridges toward the southern end of the region.

Oak-pine forests dominate the area. Although the amount of land on the installation that is forested is substantial, no stands of climax forests exist on Fort McClellan. Stands of mature long-leaf pine (*Pinus palustrus*) exist on the installation.

Most of Pelham Range was cleared prior to purchase by the Army in 1940. Cleared areas were used for food and livestock production. There are 3 classifications of land on the installation: improved, semi-improved and unimproved grounds. Differences in classifications depend on the amount of disturbance and management programs in place. There are 2279 acres of improved grounds, 921 acres of semi-improved grounds, and 37,991 acres of unimproved grounds (Ebasco Environmental 1994).

Tree species found on mountainous uplands at Fort McClellan include: chestnut oak (*Quercus prinus*), scarlet oak (*Q. coccinea*), and pignut hickory (*Carya glabra*). More rolling hills are vegetated by southern red oak (*Q. falcata*), post oak (*Q. stellata*), chestnut oak, black oak (*Q. velutina*), blackjack oak (*Q. marilandica*), pignut hickory, and dogwood (*Cornus florida*). American beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*),

white ash (*Fraxinus americana*), maple (*Acer* spp.), white oak (*Q. alba*), American holly (*Ilex opaca*), and redbud (*Cercis canadensis*) grow in ravines between mountains and hills. Virginia pine *(Pinus virginiana*) is found along ridges, and longleaf pine is present along lower slopes of hills. Loblolly pine *(Pinus taeda*) has been planted in many areas at Fort McClellan.

Wetlands play an important role in the natural diversity of the post. Many wetlands are present on the installation including Bottomland Hardwood communities, hardwood depressions in upland communities, mixed scrub-shrub communities and herbaceous wetlands.

Canopy species in bottomland hardwood communities include: green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), red maple (*Acer rubrum*), American elm (*Ulmus americana*), water oak (*Quercus niger*), and sweetgum (*Liquidambar styraciflua*). Dominant riparian vegetation includes sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), and black willow (*Salix nigra*). The herbaceous layer is dominated by sedges (*Carex* spp.), snakeroot (*Sanicula canadensis*), false nettle (*Boehmeria cylindrica*), green dragon (*Arisaema dracontium*), spotted jewelweed (*Impatiens capensis*), purple bluets (*Houstonia purpurea*), sensitive fern *(Onoclea sensibilis*), Virginia dayflower (*Commelina virginica*), river oats (*Chasmanthium latifolium*), sphagnum (*Sphagnum* spp.), nut rush (*Scleria triglomerata*), and woolgrass (*Scirpus cyperinus*).

Swamp dogwood (*Cornus drummondii*), alder (*Alnus serrulata*), buttonbush (*Cephalanthus occidentalis*), and seedlings of river birch, sycamore, sweet gum, and black willow dominate wetland scrub-shrub communities.

Herbaceous wetlands on the installation are dominates by woolgrass, soft rush, cattail (*Typha latifolia*), seedbox (*Ludwigia* spp.), panic grass (*Panicum dichotomiflorum*), and sedges (Ebasco Environmental 1994).

3.1.7 Wildlife

A variety of wildlife species have been documented on Fort McClellan. Commonly identified species include white-tailed deer (*Odocoileus virginianus*), eastern cottontail rabbit

(*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), New England cottontail rabbit (*Sylvilagus transitionalis*), gray squirrel (*Sciurus carolinensis*), eastern fox squirrel (*Sciurus niger*), opossom (*Didelphus virginiana*), beaver (*Castor canadensis*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes fulva*), bobcat (*Felis rufus*), wild turkey (*Meleagris gallapavo*), northern bobwhite (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and many species of waterfowl (Ebasco Environmental 1994).

Some species of threatened and endangered plants and animals occur or may occur within the limits of the installation (Table 2).

3.2 SAMPLE LOCATION DESCRIPTIONS

Media samples were taken from 3 smoke range training sites, Range 24 A (Figure 2), Range 56 (Figure 3), and Battle Drill Area (Figure 3), and one reference site, the Choccolocco Creek area near Fort McClellan (Figure 2). Samples of water, soil, vegetation, bats, fish, and insects were taken from each site and analyzed for chemical constituents found in fog oil.

TABLE 2. Threatened and endangered species known to occur on Fort McClellan. Status and location are presented (Ebasco Environmental 1994).

Common Name Scientific Name	Location	Federal Status (State Staus)
White Fringless Orchid *Platanthera integrilabia*	On Fort McClellan	Candidate
Fraser's Loosestrife *Lysimachia fraseri*	On Fort McClellan	Candidate
Mohr's Barbara's-Buttons *Marshallia mohrii*	On Fort McClellan	Threatened
Blue Shiner *Notropis caeruleus*	Near Fort McClellan Reported from Choccolocco Creek	Threatened
Red-cockaded Woodpecker *Picoides borealis*	Near Fort McClellan Habitat Present (Formerly nested on the post)	Endangered (State Listed)

3.2.1 Range 24 A - Site 1

Range 24 A (40 acres) is on Main Post, southeast of the cantonment area. An intermittent tributary to the South Branch of Cane Creek runs through the middle of this range from south to north. Range 24 slopes gently to the stream from the west, and slopes up sharply on the eastern side.

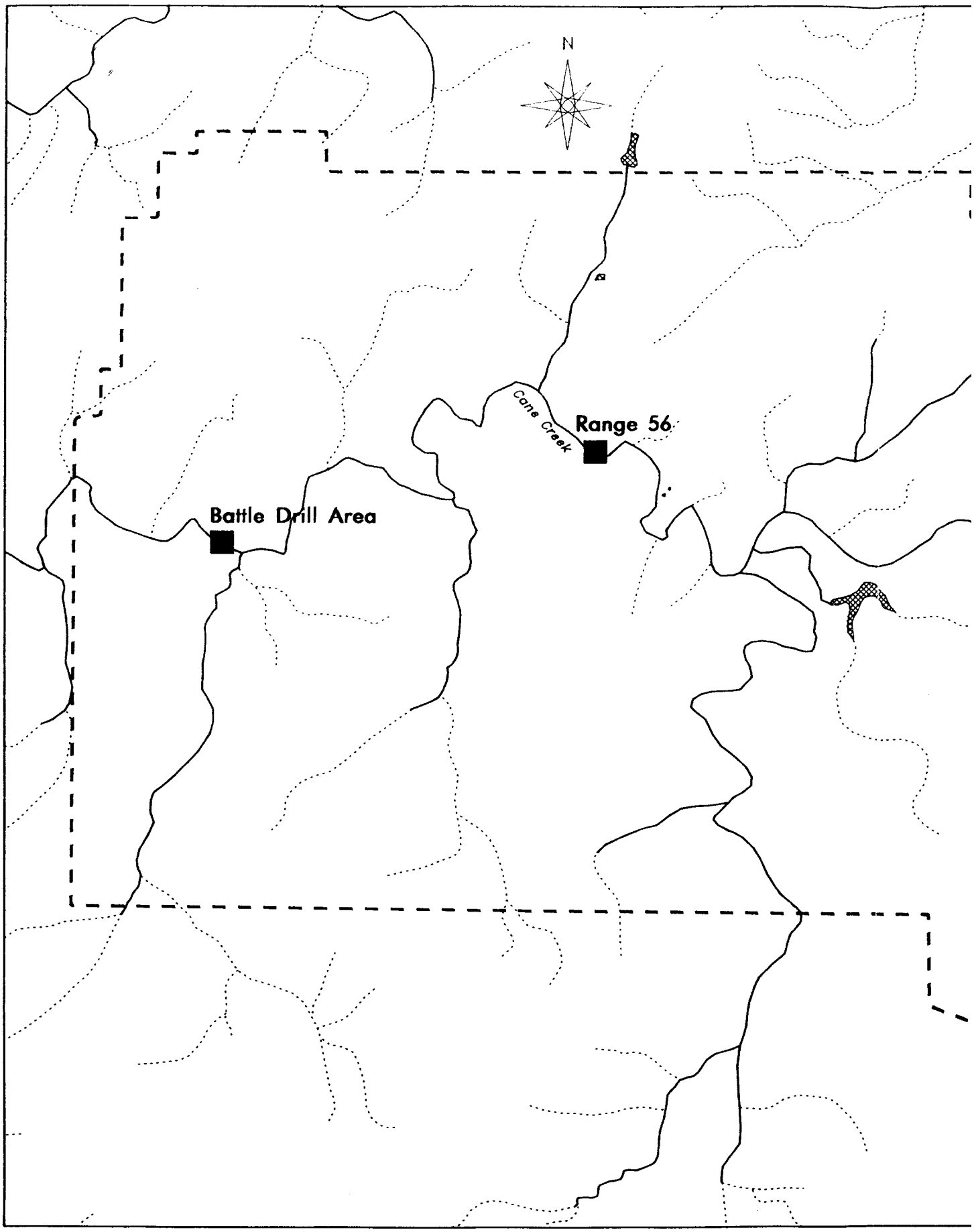
The smoke release point is in a loblolly pine stand, averaging 25 cm diameter at breast height (dbh), on the southeast corner of Range 24. East of the release area is a large mowed field that leads to a 50-foot wide strip of riparian forest along the west side of the intermittent stream. Riparian vegetation along the stream consists of small, dense maples and hickories averaging 15 cm dbh. The average width of the stream is 10 feet. West of the stream is a steep sloping forest dominated by oaks with interspersed pines averaging 25 cm dbh. Soil types at Range 24 A are Anniston and Allen stony loams.

3.2.2 Range 56 - Site 2

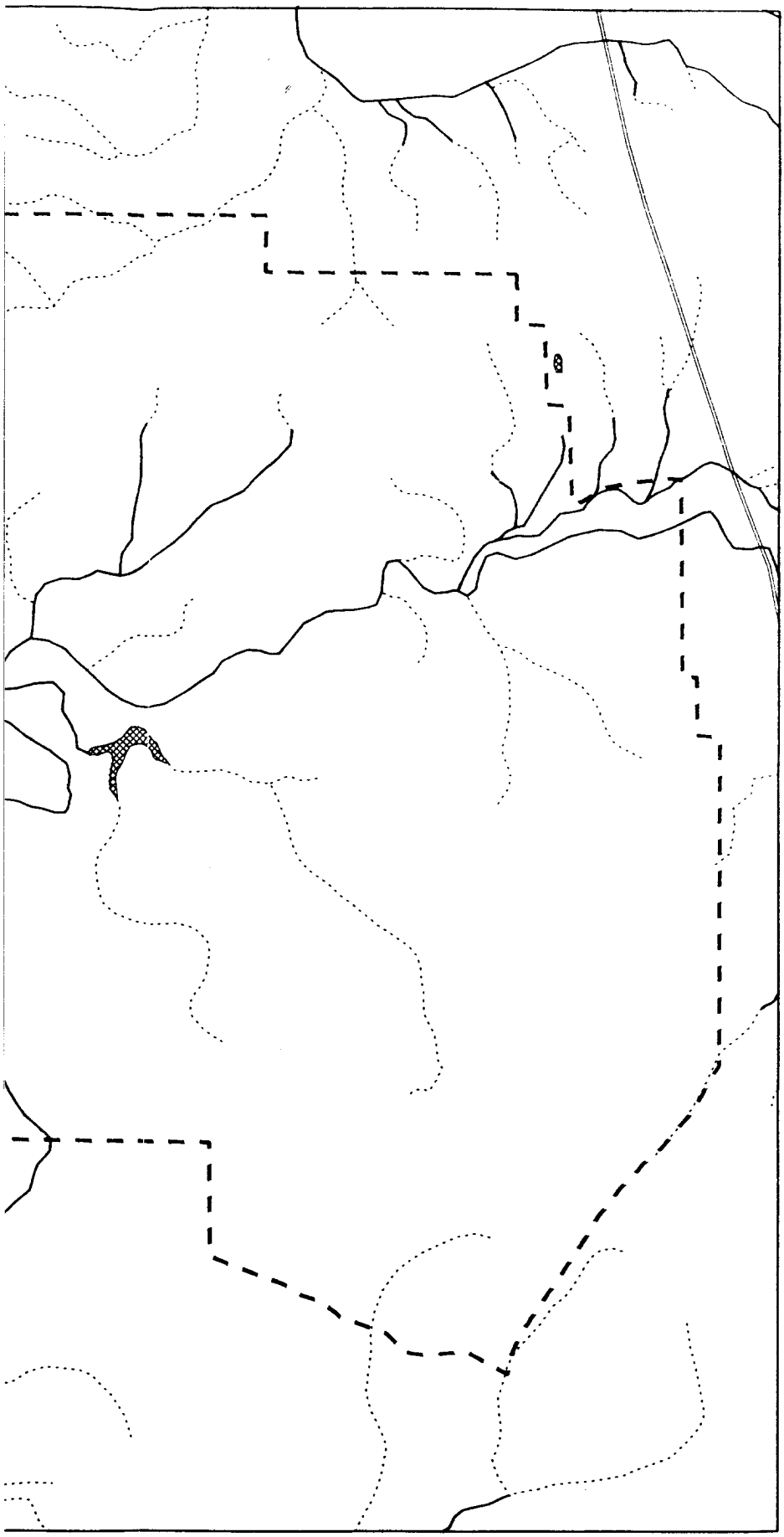
Range 56 is located on Pelham Range north of Cane Creek, southwest of the Old Air Strip, and east of Brook Mountain. Range 56 is an open field containing early successional vegetation dominated by sumac (*Rhus sp.*) and blackberry (*Rubus sp.*). The terrain where smoke is generated is relatively level, but slopes up sharply to the observation area on the east side. Soil samples were taken on the active portion of Range 56; other samples at this site were taken at Cane Creek adjacent to the range.

Cane Creek flows from east to west. At the sample site, the creek is dammed. Above the dam, the creek is 100 feet wide with a low flow rate. Below the dam, the creek flows swiftly and is 60 feet wide. Forest is fragmented throughout the area. Several woodlots exist near the creek. There are two loblolly pine plantations averaging 20 cm dbh on the north side. Riparian forest along the creek is dominated by elm, hickory, and maple with an average canopy tree diameter of 20 cm dbh. Soil types within the riparian zone of Cane Creek are Philo and Sendal silt loams. Soil types on Range 56 are Fullerton cherty silt loam, Lindside silt loam, and Rarden gravelly loam.

(1)



(2)



ENVIRONMENTAL FATE OF FOG OIL AT FORT McCLELLAN, ALABAMA.

FIGURE 3. Sample locations on Pelham Range at Fort McClellan, Alabama.

- Chronic Fog Oil Study Sampling Location
- Fort Boundary
- Pond / Lake
- Stream
- Intermittent Stream
- Dual Lane Road

Kilometers

0 1 2 3

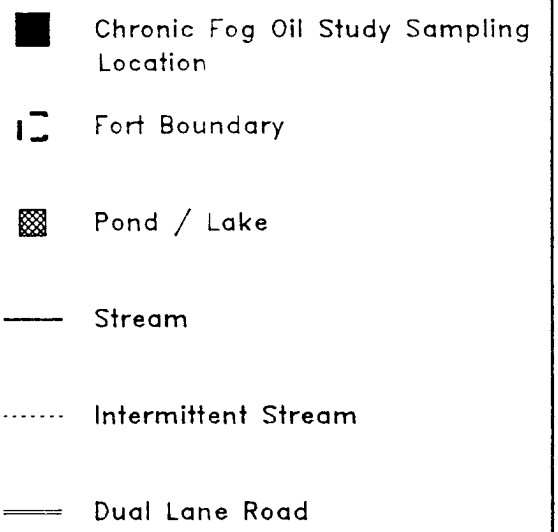
1 centimeter = 0.5 kilometer

3D/ENVIRONMENTAL

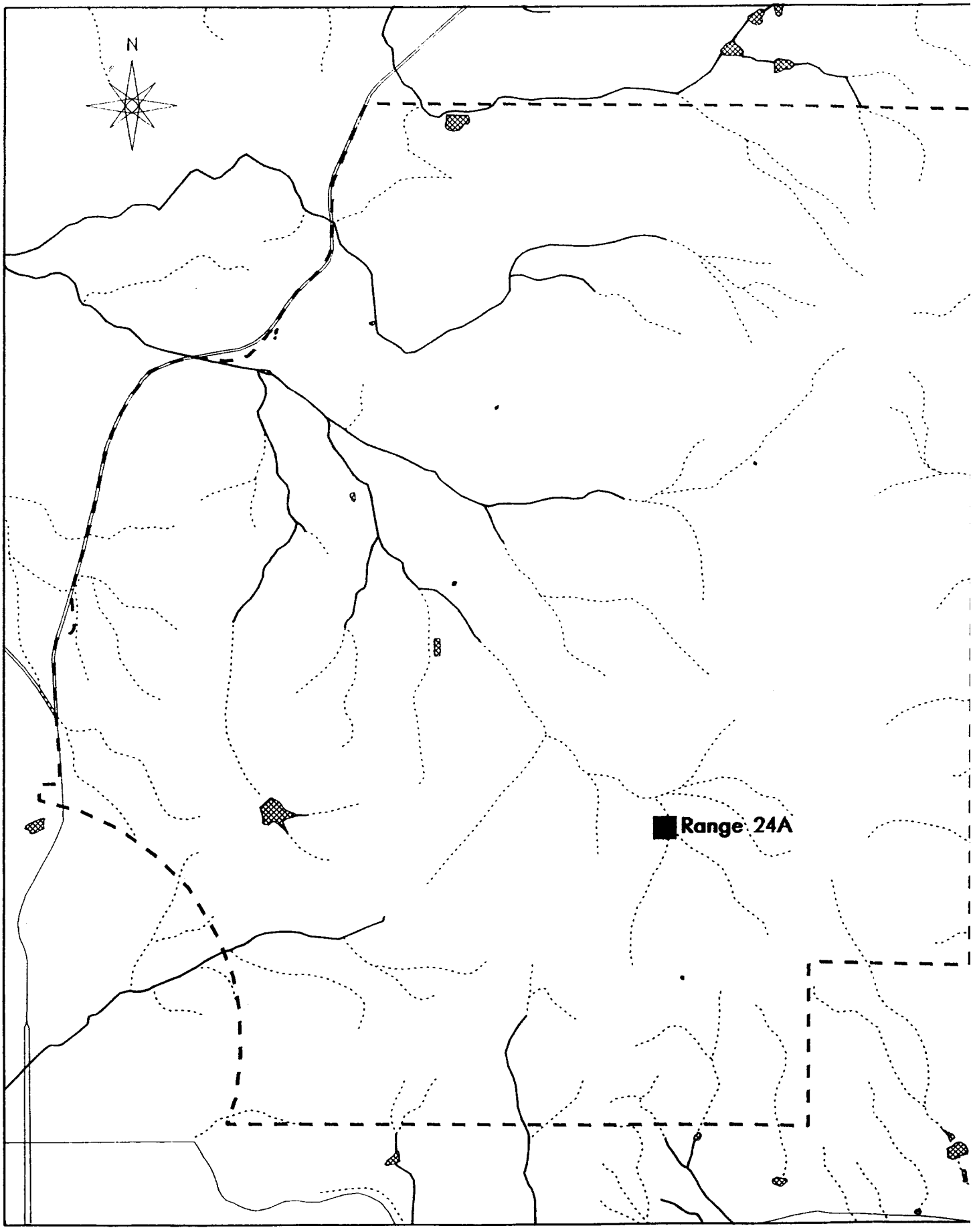
(3)

ENVIRONMENTAL FATE OF FOG OIL AT FORT McCLELLAN, ALABAMA.

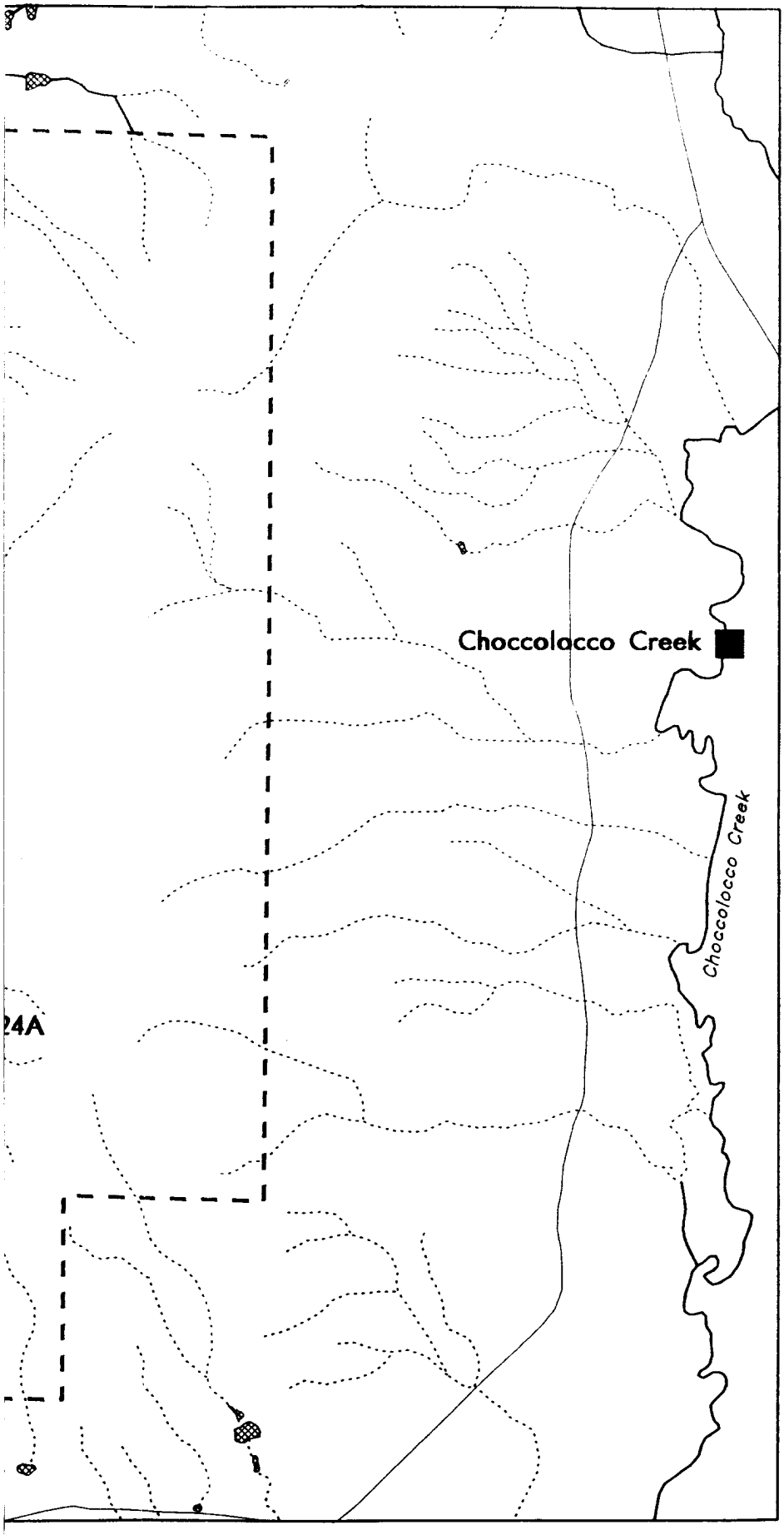
FIGURE 3. Sample locations on Pelham Range at Fort McClellan, Alabama.



3D/ENVIRONMENTAL


N
Range 24A

(2)



ENVIRONMENTAL FATE OF FOG OIL
AT FORT McCLELLAN, ALABAMA

FIGURE 2. Sample locations on Main Post at Fort McClellan, Alabama.

- Chronic Fog Oil Study Sampling Location
- Fort Boundary
- Pond / Lake
- Stream
- Intermittent Stream
- Dual Lane Road
- Principal Road

Kilometers

0 1 2 3

1 centimeter = 0.5 kilometer

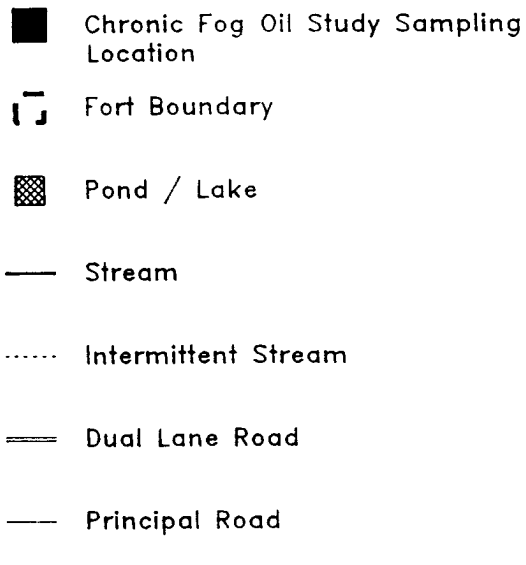
3D/ENVIRONMENTAL

(3)

ENVIRONMENTAL FATE OF FOG OIL

AT FORT McCLELLAN, ALABAMA

FIGURE 2. Sample locations on Main Post at Fort McClellan, Alabama.



1 centimeter = 0.5 kilometer

3D/ENVIRONMENTAL

3.2.3 Battle Drill Area - Site 3

The Battle Drill Area is on Pelham Range north of Cane Creek and southwest of Brook Mountain. This area is a heavily used, open field that slopes gently toward Cane Creek. The open field training area north of Cane Creek is approximately 95 acres. Limited forest exists along both sides of the creek.

The forest along the creek is dominated by poplar and sweet gum averaging 25 cm dbh. There are loblolly pines interspersed throughout the forest. The average width of Cane Creek at this location is 60 feet. A ford used by all-terrain vehicles exists 100 feet east of the bridge. Soil types in the riparian zone of Cane Creek are Philo and Stendal silt loams. The primary soil types on the Battle Drill Area are Anniston and Allen gravelly loams.

3.2.4 Choccolocco Creek - Site 4

Choccolocco Creek is approximately 3.5 km east of Main Post. The land surrounding Choccolocco Creek at the sample site is part of the Choccolocco Creek State Forest. This land is leased by Fort McClellan for some non-intrusive military training activities. Sampling was conducted on both sides of a road bridge that crosses the creek.

This stream flows from north to south. Choccolocco Creek is a fast flowing stream with many shallow pools and an average width of 50 feet. The forested floodplain is dominated by sweetgum, maple, and elm with an average canopy tree diameter of 30 cm. Pines are interspersed throughout the floodplain but occur in lower numbers than in other sample sites. Soil types on the east side of Choccolocco Creek are Altavista and Masada silt loams. The soil type on the west side of the creek is Pope silt loam.

Section 4.0

Methods

4.1 RECONNAISSANCE TRIP AND SELECTION OF SAMPLE SITES

3D/Environmental performed a reconnaissance trip to Fort McClellan, Alabama (August 1995). During this trip, we identified smoke training areas on the installation and types of training occurring on each location. Information was obtained on fog oil, smoke generators, air permits, technical manuals, field data sheets, weather data for one year, and previously conducted environmental studies. We collected samples of fog oil from a 55 gallon drum in the fog oil storage area at 24 A. A chain of custody form was completed and the samples were sent to a laboratory for analysis of compounds listed in Table 4 (Appendix A).

During reconnaissance, 3D/E visited 3 smoke training areas, Range 24 A, Range 56 and the Battle Drill Area. All 3 sites currently are used for smoke training. Previous land uses and training activities at each location were identified. We also identified potential reference locations on the installation, based on lack of anthropogenic influence, soil type, presence of aquatic habitat, and possible bat habitat in the vicinity. 3D/Environmental observed 2 smoke training exercises at Range 56 on Pelham Range.

4.2 MODELING FOG OIL DISPERSION

We used TREMS 1 (Tactical Resources Modeling Evaluation Modeling Systems) air dispersion model to estimate fog oil dispersion from each exposure site. These estimates were used in determining locations of sample sites relative to fog oil training areas.

4.3 MEDIA SAMPLING METHODS

Soil, stream sediment, and water samples may contact fog oil either through dispersion, runoff, or deposition.[. All samples were collected using standard field collection techniques. Replicate samples of soil, water, and sediment were taken every tenth sample.

Samples of insects, bats, and fish were taken at Range 24 A, Range 56, Battle Drill Area and a reference site along Choccolocco Creek. Weather data including temperature, wind speed and direction, moon phase, and percent cloud cover were recorded for each night of insect and animal collection. Organisms and tissues were collected using accepted standard practices.

4.3.1 Soil

Nineteen soil samples were collected at each site. Samples were collected near the point of chemical release. A random sampling location was selected at the reference site and then samples were taken as if it was a fog oil release point. One sample was taken 50 m upwind from the release point. Samples were taken 50 m, 100 m, and 200 m downwind from the release point. Colocated samples were taken at the 50 m location, 50 m from the location on both sides. For each sample, an auger was used to collect soil at depths of 0-3 inches, 3-12 inches, and 1-3 feet. A duplicate was taken after every tenth core sample. Parameters outlined by the EPA (EPA 1991a) were used for soil sampling. Each sample was homogenized in a stainless steel bowl with a stainless steel spoon. The sample was quartered, each portion mixed separately, and portions recombined. A sample jar was filled with homogenized soil. The soil auger, bowl, and spoon were decontaminated with distilled water after each soil sampling (EPA 1991a).

4.3.2 Surface Water

Surface water was collected following EPA guidelines (EPA 1991b) and procedures of the Hach Company (1989). At exposure sites, samples were collected near a bridge or road from which fog oil is released. At the reference site samples were collected near a bridge. At Range 56, Battle Drill Area, and the reference site, 10 samples were collected at 50 m intervals; five upstream and five downstream from the bridge or dam. The stream at Range 24 A was intermittent and samples of water were taken from 3 sites in 2 different streams near the chemical release area.

At each sampling location, stream width, bank height, water turbidity, and sediment type were recorded. Water and sediment samples were collected by entering the stream perpendicular to the sample location. When possible, samples were collected from mid-stream. Water was collected in a 1-L amber glass sample bottle. The bottle was turned upside down, lowered to mid-depth, turned upright, and raised to the surface. The sample bottle was labeled with sample number, date, and sampling site. Using the same collection method, an additional water sample was collected in a 12-oz plastic sample jar.

Flow rate of the stream was determined for the portion of the stream from which water and sediment samples were collected. Flow rate was calculated by measuring width and depth of the stream and determining travel time of a buoyant object across a known distance. Flow rate was calculated at 2 locations for each site.

Temperature, total dissolved solids, and dissolved oxygen content of samples in 12-oz plastic containers were measured in the field. Temperature was measured using a Temperature Pocket Pal Tester (Model 44450-00, Hach Company, Loveland Colorado). The range of the temperature tester is -50 to 170°C (accuracy ±1°C). The probe was immersed in the sample and gently stirred until the digital display stabilized.

Conductivity was measured using a Total Dissolved Solids (TDS) Pocket Pal Tester (Model 44600, Hach Company, Loveland Colorado). The detection range of the TDS tester is 10 to 1990 TDS units with an accuracy of ±2 at 25°C. The probe was immersed in the sample and gently stirred until the digital display stabilized.

Dissolved oxygen content was measured using CHEMets® colorimetric analysis kit (CHEMetrics, Inc., Calverton, Virginia). The kit included CHEMet® vacuum ampoules filled with solution; an instrument with which to break the ampoules, and a color chart with which to match color intensity of the solution with dissolved oxygen content of the sample. An ampoule was immersed in the sample and broken, allowing sample water to flow into the ampoule. The ampoule was mixed gently for approximately 2 minutes to introduce sample water with analytical solution. Upon mixing, the solution developed a blue color. The color of the filled ampoule was compared with a color chart to determine the parts per million (ppm) of dissolved oxygen in the water sample.

Samples collected in 12-oz plastic jars were used to measure hardness and pH 1-8 h after samples were taken. Hardness, measured as milligrams calcium carbonate per liter of water, was determined with a digital titrator and hardness kit (model HA-DT, Hach Company, Loveland Colorado). A 50 mL sample was removed from the plastic jar and procedures of the Hach Company (1989) were followed. The result was doubled to obtain total hardness per 100 mL.

Sample pH was measured using a pH Pocket Pal Tester (Model 44350-00, Hach Company, Loveland Colorado). The range of the pH tester is 0.0-14.0 pH and accuracy is ±0.2 pH. Prior to testing each sample, the pH tester was calibrated using pH 7.0, 4.0. and 10.0 solutions (Hach Company, Loveland Colorado). The tester was immersed in 7.0 buffer solution and then immersed in the sample.

Samples in plastic jars were discarded after pH and hardness were analyzed. Samples in 1-L glass bottles were sealed and transported to a laboratory within 24 hours of collection in a cooler containing ice.

4.3.3 Stream Sediment

Stream sediment was collected following EPA guidelines (EPA 1991b). Sample locations were coincident with water sample locations. A shovel was used to scoop sediment from beneath the water into an 8 ounce glass sample jar with a Teflon®-lined lid. Large rocks were removed from sediment samples. Jars were labeled with sample site, sample number, and date.

4.3.4 Vegetation

Vegetation sampling included collection of tissue samples for laboratory analysis and transect sampling to determine species composition. Tissue samples were analyzed to identify fog oil components.

Three tissue samples were collected from each site. At each exposure site, 3 live trees near chemical release areas were selected. At the reference site, 3 live trees were selected. From each tree, 6 in^2 of bark were scraped into a whirl pak®. Ten leaves from the tree were removed and included in the same whirl pak. Gloves were worn to avoid contamination. The species from which samples were taken was identified and samples were transported in a cooler containing dry ice.

At each site, two 100 m transects were established along identical bearings to minimize effects of sunlight exposure on plant growth. Diameter at breast height (dbh), tree height, and species were recorded for every tree greater than 1.8 m tall within 1 m of the transect. This data was used to compare exposure sites with the reference site.

4.3.5 Insects

Insects were collected for contaminants analysis using black (ultraviolet) and white (fluorescent) light traps. The traps consist of a light source surrounded by Plexiglas dividers over a funnel with a mesh bag that retains the insects alive. Traps were suspended at least 2 m in the air to capture night flying insects. One black and one white light trap were deployed at dusk (1900-2130 h) for 2 nights at each exposure site. Insects were collected simultaneously at the reference site. Between 0200-0320 h, traps were emptied into whirl paks®. and samples were weighed. Samples were stored and shipped on dry ice.

Insects collected for analysis of fog oil hydrocarbons were to be split, one half for analysis and one half for characterization of insect communities at the 4 sites. We were unable to collect sufficient samples of insects to split the samples. Therefore, an additional night of trapping was performed to provide insects that could be used to characterize insect communities. One night of trapping does not provide enough data to draw statistical inferences. Therefore, the information presented for insects communities should be considered as baseline information only. One black and one white light trap were deployed

at each site between 1745 h and 2015 h. Insects were collected between 0755 h and 0940 h the next day. Samples were labeled and returned to 3D/E. Insects were identified to Order. For each site, the Shannon-Weiner Diversity Index and evenness of species were calculated. The Jacard Similarity Index was used to compare composition of insect species at the reference site with each exposure site.

4.3.6 Bats

Bats were simultaneously captured at the reference and exposure sites for contaminants analysis. Mist-netting followed procedures outlined in the 1991 Indiana/Gray Bat Recovery Team Meeting Notes. Nets were stacked 6.1 or 9.1 m high and raised from sunset until at least 0200 h. Nets were positioned from the ground or water to the tree canopy, with enclosing foliage or stream banks on each side. Nets were checked every 20 minutes and care was taken to avoid disturbance within 50 m of nets. Mist-netting was conducted on nights with little or no precipitation, ambient temperature >10°C, and light or no wind. Netting was not conducted under full moon, unless there was at least 50% cloud or canopy cover.

Two sites were netted each calendar night. Three nets were deployed at each exposure site per night, for two consecutive nights. This yielded a total of 6 net-nights per exposure site. Three nets were operational at the reference site on all nights of the survey, yielding a total of 12 net-nights. At Range 56, Battle Drill Area, and the reference site, nets were erected across streams. At Range 24 A, vegetation was too dense to permit net placement over the stream; nets were erected on a nearby dirt road.

Bats were removed from nets and processed. Protected bats (e.g., gray bats) were released unharmed at the capture site. We recorded the following data for each bat: species, age, sex, reproductive condition, right forearm length, weight, time of capture, capture height in net, and travel direction. Gray bats were marked with a numbered, white plastic armband before being released. At each sample site, up to 8 non-endangered bats were collected, anesthetized (with CO_2), and euthanized following accepted procedures (NIH 1985). These bats were processed for tissue analysis.

4.3.7 Fish

We seined to sample fish because it is effective in small streams or pools with little cover (EPA 1989). Seines were approximately 15 ft wide, and made of nylon netting with wooden poles on each end. We sampled fish at 2 exposure sites: Battle Drill Area and Range 56. We also seined the Choccolocco Creek reference site. All streams were small and smooth bottomed with pools and riffles. We could not seine the intermittent stream at Range 24 A. Collection, processing, and analysis were done following EPA (1989) and Krueger et al. (1988) standards.

4.4 SAMPLE PRESERVATION AND SHIPMENT

Bats and insects were euthanized and preserved with dry ice. Any large insects captured during bat mist netting surveys were collected by hand and placed in whirl paks. Insects caught in nets were weighed and labeled separately. Up to 8 non-endangered bats per site were placed in a dry ice chamber for 15 minutes for euthanasia. The bats were weighed and placed in sample bottles. Fecal samples were collected from each gray bat captured. Fecal samples were stored and transported in dry ice. Following collection, samples were sealed and shipped in dry ice the next day. Water and stream sediment samples were sealed and transported in a cooler containing ice.

4.5 LABORATORY ANALYTICAL METHODS

Over 200 samples were collected at Fort McClellan (Table 3). We reviewed the literature to determine components of fog oil which might be found in media samples (Table 4). Samples were analyzed for aromatic residues of fog oil.

Results of these analyses are in Appendix A. Gas chromatograph/mass selective detector (GC/MSD) confirmation of selected samples was conducted to confirm residues found by flame ionization detector (FID). Generally, 2 samples from each matrix were selected (one from the exposure site and one from the reference site). Samples were selected based on the number of spikes indicating presence of fog oil components as well as the apparent concentration of any selected compound. Confirmation results are in Appendix A.

TABLE 3. Number and type of laboratory samples from Fort McClellan.

Medium	Number of Samples
Soil	78
Bats	20
Insects	12 (35)[1]
Sediment	35
Guano	3 (8)[1]
Bark/Leaves	12
Water	29
Fish	13

[1] The number in () indicates the actual number of samples taken. The guano and insect samples were composited, respectively, so that all samples collected on each night would be analyzed as a single sample.

TABLE 4. Fog oil hydrocarbons with long environmental residence time selected for analysis. Samples were analyzed for these compounds and their isomers.

Fog Oil Components	
Biphenyl	Fluorene
9-Methylanthracene	2,6-Dimethylnaphthalene
4,4'-Dimethylbiphenyl	3,6-Dimethylphenanthrene
1,3-Dimethylnaphthalene	1-Methylfluorene
2-Ethylanthracene	1,2-Dimethylnaphthalene
Phenanthrene	9,10-Dimethylanthracene
2,3,5-Trimethylnaphthalene	Anthracene
Hexachloroethane	Hexadecane
2-Methylphenanthrene	

Attempts were made to characterize fog oil. The parent oil was diluted in hexane to a concentration of 1% and injected on a GC/FID using a DB-5. The oil was cleaned using a silicon (Si) column and the extract injected. A second aliquot of the 1% solution was injected on a GC/MSD in Scan mode and the ion range 75-76 amu (aromatic ring) was monitored. The absence of peaks in this mass range indicate there are no aromatics in fog oil. Standards were injected to demonstrate the detection limits with the MSD. It was determined that a 5 µg/mL standard would give the minimum quantifiable response. Matrix interferences may increase this level (see Appendix A).

Fog oil was analyzed with ultraviolet light. A 0.001% solution was prepared and scanned from 200 to 400 nm. The lack of an absorbance peak ~ 250 nm indicates there are no aromatics in the fog oil (Appendix A).

Fog oil was analyzed by infrared light (IR). Neat fog oil was placed on an IR card (Figure 6). Triplicate peaks at 2850 - 2960 cm^{-1} as well as peaks at 1375 cm^{-1} and 1460 cm^{-1} are characteristic of alkanes. There are no peaks at 3000 - 3100 cm^{-1} (aromatic) or at 3020 - 3080 cm^{-1} and 1640 - 1680 cm^{-1} (alkenes), indicating no aromatics or alkenes in fog oil. To determine the detection limits for the IR, 1 mL of fog oil was spiked with various levels of 9-methyl anthracene and diluted to 10 mL with freon and analyzed using a cuvette with a 1 cm path length. The detection limit (semi-quantitative) for total aromatics in fog oil was 5% (Appendix A).

4.4.1 Soil and Sediment (Based on EPA Methods 8100, 3540, and 3630)

A 10 g soil sample was weighed into a 16 ounce jar with a Teflon-lined lid and 30 g of Na_2SO_4 and 200 mL of acetone:hexane were added. The mixture was mechanically shaken for 1 hour filtered through GF/A, and evaporated to < 5 mL. A 10 g Si column was prepared by transferring a slurry of Si with methylene chloride to a glass column with a glass wool plug in the bottom. A small amount (1-2 cm) of Na_2SO_4 was added to the top and methylene chloride was allowed to drain through the column. The column was rinsed with 40 mL of pet ether. The sample was loaded onto the column. The flask was rinsed with 2 mL cyclohexane and the rinse transferred to the column, with these load fractions discarded. The column was eluted with 75 mL of pet ether and 75 mL of methylene chloride (collected separately). These two fractions were rotary evaporated to < 5 mL and transferred to calibrated (1 mL) test tubes. Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.2 Water (EPA Method 525)

A C_{18} column was conditioned with 5 mL each methanol, methylene chloride, methanol, and water. Approximately 50 g of NaCl was added to a 500 mL water sample. Some samples required prefiltering through Whatman GF/A. The sample was aspirated through the SPE column under vacuum. The column was eluted with 6 mL methylene

chloride:pet ether (50:50). Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.3 Insects, Bats, Guano, Fish, Bark/Leaves

The EPA has not established standard methods for sampling and analyzing tissue samples. However, these matrices were extracted using the soil/sediment methodology with modifications for extraction and additional cleanup.

Ten grams of fish and vegetation tissue were analyzed for each sample. For all other biological matrices, we used the entire sample for analysis. Na_2SO_4 was added to each sample at 4 times the sample weight. Samples were extracted twice with 100 mL methylene chloride and vacuum filtered through Whatman GF/A. Samples were rotary evaporated to ~ 5 mL and the volume adjusted to 10 mL with methylene chloride. A 5-mL aliquot was loaded onto a GPC column. The collected fraction was evaporated and solvent exchanged to cyclohexane. EPA Method 3630 (Silica Gel Cleanup) was used to clean the sample. A 10 g Si column was prepared by making a slurry of Si with methylene chloride. This slurry was transferred to a glass column with a glass wool plug in the bottom. A small amount of Na_2SO_4 (1-2 cm) was added to the top of the Si. The methylene chloride was allowed to drain through the column. The column was rinsed with 40 mL of pet ether and the sample loaded onto the column. The flask was rinsed with 2 mL of cyclohexane and the rinse transferred to the column. These load fractions were discarded. The column was eluted with 75 mL of pet ether and 75 mL of methylene chloride (collected separately). These two fractions were rotary evaporated to < 5 mL and transferred to calibrated (1 mL) test tubes. Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.4 Mass Spectrophotometry Confirmation

Two samples from each matrix were selected (one from a treated site and one from the reference site). The samples were selected based on the number of detections as well as the apparent concentration of any selected compound. The MSD was run in select ion monitoring mode to increase sensitivity ~ 500 times and reduce problems associated with interfering coextractives.

4.4.5 Quality Assurance and Control Samples

We prepared a field replicate sample of soil, surface water, and sediment every tenth sample. No field blanks were prepared because the preservative was either dry or wet ice. The laboratory prepared matrix spike samples, method blanks, and equipment blanks per their internal Quality Assurance policy.

4.6 STATISTICAL ANALYSIS

Statistics were performed using SPSS for Windows Version 6.1. We used *t*-tests to compare chemical presence between Site 1 and Site 4, Site 2 and Site 4, and Site 3 and Site 4. We used one-way ANOVA to look for relationships among all 4 sites. Replicate observations were omitted from analyses because they would unfairly weight those sampling points that were replicated.

For the soil, surface water, sediment, and vegetation chemical analyses, a value of 0 was used if the data provided a detection limit rather than a specific value (for example, "<0.05"). This is a valid technique because our objective was to determine differences between sites, not to determine absolute amount of chemical present. Using 0 maximizes differences between sites with no chemical present and those with chemicals present. For example, if Site 1 has 0.051 ppm chemical present and Site 4 has 0 ppm, using the detection limit of 0.05 as the value for Site 4 would result in no difference between the two sites, whereas using 0 results in a difference. Using 0 minimizes the risk of not finding a difference when in fact there is one. The 0 value was used only for difference computations; raw data was presented as reported by laboratory analysis, with detection limits.

Analysis of soil, surface water, sediment, and vegetation was done using detection limit values to see if results changed and what these differences were. However, we summarized results only with comparisons using 0 values. For the soil data, we also did the analysis separating the samples into three equal depths.

In animal tissue analysis, detection limit values were used because detection limit values were inconsistent across all observations within a given group (for example:

detection limits among insect samples differed because of differences in sample sizes and different individuals conducting analyses).

4.7 SITE SIMILARITY INDEXES

We calculated two indices of similarity to compare transect and insect data from the same site and between exposure sites and the reference site. Both the Jacquard and Simpson index of similarity are calculated by using derivations of the formula described below. The closer a similarity index is to 1.0, the more similar the two samples are in species composition.

$$S = \frac{2C}{A+B}$$

Where:

S = Index of Similarity
C = Number of species common to both sites
A = Number of species in site A sample
B = Number of species in site B sample

4.8 FOG OIL SMOKE SAMPLES

On 2 and 3 October 1995, 3D/Environmental collected 12 samples of fog oil (smoke) from operating M157 and M56 generators at Fort McClellan, Alabama. Smoke samples were drawn by vacuum into 6-L Summa Air Canisters®. Summa Air Canisters were leased from Grasbey New Technologies of Smyrna, Georgia. Four samples were taken at each of the following locations: Range 24 A, Range 56, and the Pelham Range Vehicle Maintenance Facility (Table 5). One background sample was taken at each location 5 minutes prior to fog oil generator smoke production. Air temperature was recorded for all samples. Samples were analyzed by methods similar to those previously described in this document (Section 4.4) using a GC/MSD. Chromatograms of analysis are presented in Appendix F.

TABLE 5. Location, distance, and type of generator information for fog oil smoke samples.

Sample Number	Location	Distance	Generator
1	24 A	0 m*	XM 56
2	24 A	10 m	XM 56
3	24 A	20 m	XM 56
4	24 A	30 m	XM 56
5	Range 56	0 m*	M157
6	Range 56	0 m**	M157
7	Range 56	10 m	M157
8	Range 56	20 m	M157
9	Vehicle Maintenance Facility	0 m*	M157
10	Vehicle Maintenance Facility	10 m	M157
11	Vehicle Maintenance Facility	20 m	M157
12	Vehicle Maintenance Facility	20 m	M157

*sample canister was placed at the base of the generator

**sample canister was placed on top of generator unit near the fog oil smoke exit port

Section 5.0

Results/Discussion

5.1 INTRODUCTION

The results of chemical analyses are organized by media into tables in Appendix A. The following designations and site locations were used to identify samples from the 4 sites in this study.

- Site 1 = Range 24A (exposure site)
- Site 2 = Range 56 (exposure site)
- Site 3 = Battle Drill Area (exposure site)
- Site 4 = Choccolocco Creek (reference/control site)

We developed a sample identification scheme to distinguish samples by media, sample location, and sample order (Appendix A). Each tissue sample was given a 2 letter designation followed by the site number. TM was used for tissue mammal, TI was tissue insect, TF was tissue fish, TV was tissue vegetation, and TM# - G# indicates the site and bat number the guano sample was taken from. For example, TM1 - 12 is the tissue sample from the 12th bat caught at site 1. SW# designates surface water samples from site # and SD# represents sediment samples. Soil samples were taken at three depths. SU# was for 0" - 3", SM# was for 3" - 12", and SB# was 12" to 3' depths.

The following results and discussion summarize the statistical analysis performed on the media samples. One important aspect of the study was to compare results from exposure sites (sites 1, 2, and 3) to the reference site (site 4). Exposure site samples with

detectable concentrations of hydrocarbons were compared to the reference site to determine if any detected difference was statistically significant. Analytical detection limits were mg/L for all media except surface water. The detection limit used for surface water analysis was in µg/L because drinking water tests methods were used. Drinking water standards and test methods have very low detection limits.

We also include a summary of statistical tests used to describe similarity of vegetation and insect communities between exposure sites and the reference site. When selecting a reference site, we tried to match soil types, percent canopy cover, vegetation, topography, water quality, etc.. Because limited sites on Fort McClellan were not impacted by training, our selection of the reference site was biased. The most suitable reference site was a section of Choccolocco Creek with a heavily traveled road and bridge crossing it. While no fog oil training had been conducted at this site, limited, non-intrusive training had occurred at this site. We were unable to determine the number of times this type of training had taken place at the reference site.

The following analysis focuses on differences in concentrations of hydrocarbons between the exposure sites and reference site. Comparisons of hydrocarbon concentrations between exposure sites and the reference site allow for the detection of high concentrations of hydrocarbons, with the reference site concentrations serving as background or ambient concentrations that could be found any where on the installation. One difficulty with this study is determining the exact source of hydrocarbons detected in samples. A causal relationship between exposure site/increase in fog oil hydrocarbons vs. reference site/little or no fog oil hydrocarbons may not be attributed solely to fog oil training. The exposure sites are for other types of training besides fog oil. Other obscurants such as hexachloroethane, brass, and terephthalic acid have been released at these sites. Different field and training maneuvers have been conducted at the exposure sites. The reference site has had non-intrusive training conducted there. Ideally, in order to compare exposure sites and the reference site, each exposure site should have had only fog oil smoke training conducted there and the reference site should have no training.

No fog oil (as whole oil) was detected in the samples. This indicates that fog oil (as a whole oil) is not accumulating in the environment. Analytical techniques and

methods used to test samples would have detected whole fog oil. Therefore, the absence of fog oil hydrocarbons, low concentrations found in a few samples, and the lack of whole fog oil in all samples, provide support that fog oil is not and will not bioaccumulate, bioconcentrate, or remain in the environment for any period of time. Hydrocarbons detected in the reference and exposure site samples are either natural background or from sources other than fog oil.

5.2 SOIL

Chemicals for which we analyzed (Table 4) either did not appear in soil samples, or were present in the same concentrations at exposure sites and the control site (Table 6). For the few chemicals where significant differences were found, the control site had greater concentrations of most chemicals. 2-Ethylanthracene, 1-Methylflourene, and 9,10-Dimethylanthracene showed differences between the exposure site and the control site with the control site having more of the chemicals. 1-Methylflourene and 9,10-Dimethyanthracene appear to be concentrated in the surface layer of the control site. 2-Ethylanthracene appears to be in the two top layers of the control site. The only exception was that the middle layer of Site 2 had more ($p< 0.10$) Hexadecane than the control site.

Chemical concentrations detected in soil samples from exposure sites were very low and not of concern. These low concentrations indicate no fog oil hydrocarbons are concentrating in the soil. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of fog oil hydrocarbons due to exhaust by-products from vehicles on the heavily traveled road or from stormwater runoff of contaminants on this road. Another possible source of hydrocarbons at the reference site could be from previous training material contamination.

5.3 SURFACE WATER AND STREAM SEDIMENT

Most chemicals either did not appear in the water samples or were present in the same amounts at the exposure sites and the control site (Table 7). For the chemicals where significant differences were found, all differences showed the control site having

TABLE 6. Results of fog oil component analysis for soil samples from all sites.

SOIL Chemical	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)	Surface (DEPTH=1), Site 1 v. Site 4 (t-test)	Middle (DEPTH=2), Site 1 v. Site 4 (t-test)	Bottom (DEPTH=3), Site 1 v. Site 4 (t-test)	Surface (DEPTH=1), Site 2 v. Site 4 (t-test)	Middle (DEPTH=2), Site 2 v. Site 4 (t-test)	Bottom (DEPTH=3), Site 2 v. Site 4 (t-test)	Surface (DEPTH=1), Site 3 v. Site 4 (t-test)	Middle (DEPTH=2), Site 3 v. Site 4 (t-test)	Bottom (DEPTH=3), Site 3 v. Site 4 (t-test)	Surface (DEPTH=1), All Sites (ANOVA)	Middle (DEPTH=2), All Sites (ANOVA)	Bottom (DEPTH=3), All Sites (ANOVA)
Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dimethylnaphalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dimethylnaphalene	=	=	=	=	=	=	=	NA	=	=	NA	=	=	=	=	=
1,2-Dimethylnaphalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexadecane	=	=	4>3*	=	=	=	=	=	2>4*	=	=	=	=	=	2>1>4>3**	=
Fluorene	NA	=	NA	=	NA	NA	NA	=	NA	NA	NA	NA	NA	=	NA	NA
4,4'-Dimethylbiphenyl	=	NA	NA	=	=	NA	NA	NA	NA	NA	NA	NA	NA	=	NA	NA
1-Methylfluorene	4>1**	4>2***	4>3***	4>1>2>3***	4>1**	=	=	4>2**	=	=	4>3**	4>3***	=	4>1=2=3***	4>1>2>3**	=
Phenanthrene	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Anthracene	=	2>4*	NA	=	NA	=	NA	NA	2>4*	NA	NA	NA	NA	NA	=	NA
2-Methylphenanthrene	=	=	=	=	=	=	NA	=	=	NA	=	=	NA	=	=	NA
9-Methylanthracene	=	=	=	=	=	=	NA	=	=	NA	=	=	NA	=	=	NA
3,6-Dimethylphenanthrene	=	=	=	=	=	NA	NA	=	=	NA	=	NA	NA	=	NA	NA
2-Ethylanthracene	4>1***	4>2***	4>3***	4>1>2>3***	4>1**	=	4>1*	4>2**	=	4>2**	4>3**	4>3**	4>3***	4>1>2>3***	4>1>2>3**	4>1>2>3***
9,10-Dimethylanthracene	4>1*	4>2*	4>3*	4>1=2=3**	4>1*	NA	NA	4>2*	NA	NA	4>3*	NA	NA	4>1=2=3**	NA	NA
Hexachloroethane	=	=	4>3*	=	=	=	=	4>2**	=	=	=	4>3*	=	=	=	=

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)
NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)
= - There is no statistical difference between the sites;
*** - Statistically significant difference ($p < 0.01$);
** - Statistically significant difference ($p < 0.05$);
* - Statistically significant difference ($p < 0.10$);
> - Indicates which site had the greater value.

TABLE 7. Results of fog oil component analysis for water samples from all sites.

SURFACE WATER Chemical	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Biphenyl	NA	NA	NA	NA
2,6-Dimethylnaphalene	NA	NA	NA	NA
1,3-Dimethylnaphalene	NA	NA	NA	NA
1,2-Dimethylnaphalene	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	=	=	=	=
Hexadecane	4>1**	4>2**	4>3**	4>1=2=3**
Fluorene	4>1**	4>2*	=	=
4,4'-Dimethylbiphenyl	NA	NA	NA	NA
1-Methylfluorene	=	=	=	=
Phenanthrene	NA	=	=	=
Anthracene	=	=	=	=
2-Methylphenanthrene	NA	NA	NA	NA
9-Methylanthracene	4>1**	=	4>3**	=
3,6-Dimethylphenanthrene	NA	NA	NA	NA
2-Ethylanthracene	4>1**	4>2**	4>3**	4>1=2=3**
9,10-Dimethylanthracene	4>1*	4>2*	4>3*	4>1=2=3**
Hexachloroethane	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)
NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)
= - There is no statistical difference between the sites;
*** - Statistically significant difference ($p < 0.01$);
** - Statistically significant difference ($p < 0.05$);
* - Statistically significant difference ($p < 0.10$);
> - Indicates which site had the greater value.

more of the chemical. General characteristics of stream water and sediments are listed in Appendix B.

The control site had greater concentrations of Hexadecane, 2-Ethylanthracene, and 9,10-Dimethylanthracene than all exposure sites. The control site had more Flourene than Site 1 or Site 2, and the control site had more 9-Methylanthracene than Site 1 or Site 3.

Few significant differences in concentrations were found in sediment analyses (Table 8). Hexadecane was present in greater quantities at the control site than Site 1. Phenanthrene was more prevalent at Site 3 than the control ($p < 0.10$). 2-Ethylanthracene was present in greater quantities at Site 2 than the control site ($p < 0.01$), but the control site had greater concentrations than Site 3 ($p < 0.10$).

TABLE 8. Results of fog oil component analysis for sediment samples from all sites.

SEDIMENT Chemical	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Biphenyl	NA	NA	NA	NA
2,6-Dimethylnaphalene	NA	NA	NA	NA
1,3-Dimethylnaphalene	NA	NA	NA	NA
1,2-Dimethylnaphalene	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	NA	NA	NA	NA
Hexadecane	4>1***	=	=	=
Fluorene	NA	NA	NA	NA
4,4'-Dimethylbiphenyl	NA	NA	NA	NA
1-Methylfluorene	=	=	=	=
Phenanthrene	NA	NA	3>4*	3>4=1=2**
Anthracene	=	=	=	=
2-Methylphenanthrene	=	=	=	=
9-Methylanthracene	NA	NA	NA	NA
3,6-Dimethylphenanthrene	=	NA	NA	1>4=2=3*
2-Ethylanthracene	=	2>4***	4>3*	1>2>4>3**
9,10-Dimethylanthracene	NA	NA	NA	NA
Hexachloroethane	=	=	=	=

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)
NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)
= - There is no statistical difference between the sites;
*** - Statistically significant difference ($p < 0.01$);
** - Statistically significant difference ($p < 0.05$);
* - Statistically significant difference ($p < 0.10$);
> - Indicates which site had the greater value.

Chemical concentrations detected in surface water and sediment samples from exposure sites were very low and not of concern. These low concentrations indicate no fog oil hydrocarbons are concentrating in surface water or sediment at exposure sites. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of fog oil hydrocarbons due to the gasoline/diesel by-products from exhaust of vehicles traveling on the road crossing the creek. Another source could be from training conducted at the site.

We performed water quality field tests at each surface water sample location and described the appearance of sediment samples. The purpose of this sampling was to provide additional information about stream characteristics, and to provide a tool to compare water chemistry at each site in case we found high concentrations of hydrocarbons at one particular site. The pH ranged from 6.4 to 8.4 (Appendix B). Sites 4 and 1 had lower TDS, hardness, and turbidity than sites 2 and 3 (Appendix B). Overall, water quality appeared to be good at all sample locations.

5.4 VEGETATION

There was no statistically significant difference in concentrations of fog oil hydrocarbons in samples from exposure sites and the reference site (Table 9). The two exceptions were 1,3-Dimethylnaphalene where Site 1 had more than the control site ($p < 0.05$), and 9,10-Dimethylanthracene where Site 1 had more than the control site ($p < 0.10$).

Chemical concentrations detected in bark and leaf samples from exposure sites were very low and not of concern. These low concentrations of hydrocarbons indicate no fog oil hydrocarbons are concentrating in plant tissue at exposure sites. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of hydrocarbons because of vehicles and their exhaust. A heavily traveled road crosses the creek on the site. Another source could be from non-fog oil training that was conducted on the site.

TABLE 9. Results of fog oil component analysis for plant tissue samples from all sites.

VEGETATION Chemical	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Biphenyl	=	=	=	=
2,6-Dimethylnaphalene	=	=	NA	=
1,3-Dimethylnaphalene	1>4**	=	=	=
1,2-Dimethylnaphalene	=	=	=	=
2,3,5-Trimethylnaphalene	=	=	=	1>2>3>4*
Hexadecane	=	=	=	=
Fluorene	=	=	=	=
4,4'-Dimethylbiphenyl	=	=	=	=
1-Methylfluorene	=	=	=	=
Phenanthrene	=	=	=	=
Anthracene	=	=	=	=
2-Methylphenanthrene	=	=	=	=
9-Methylanthracene	=	=	=	=
3,6-Dimethylphenanthrene	=	=	=	=
2-Ethylanthracene	=	=	=	=
9,10-Dimethylanthracene	1>4*	=	=	1>2>3>4**
Hexachloroethane	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)
NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)
= - There is no statistical difference between the sites;
*** - Statistically significant difference ($p < 0.01$);
** - Statistically significant difference ($p < 0.05$);
* - Statistically significant difference ($p < 0.10$);
> - Indicates which site had the greater value.

Descriptions of tree species and tree diameters in belt transects at sample sites are contained in Appendix C. Shannon Diversity Indexes calculated revealed little diversity in all transects (Table 10). The Shannon Diversity Index increases with diversity.

Transects at sample sites had few similar tree species. Half the transects had similarity index values below 0.5. Simpson's Index of Similarity approaches 1.0 as similarity increases. Simpson's Similarity Indices for the 8 transects are presented in Table 11. Variability within and between sites is due largely to the small number of transects.

TABLE 10. Comparisons of diversity among sites using data collected from vegetation transects.

Site	Transect	Shannon Diversity Index*
Range 24 A	1	2.366
Range 24 A	2	2.250
Range 56	1	1.309
Range 56	2	2.322
Battle Drill Area	1	2.493
Battle Drill Area	2	1.122
Choccolocco Creek	1	1.848
Choccolocco Creek	2	1.999

*Diversity values closer to 1 indicate a less diverse or a more equitable community.

TABLE 11. Simpson's Similarity Indices* calculated for vegetation transect data collected at each site.

Transect Location and Number	Choccolocco Creek - 1	Choccolocco Creek - 2
Range 24 A - 1	0.0952	0.0455
Range 24 A - 2	0.0952	0.0455
Range 56 - 1	0.1765	0.3333
Range 56 - 2	0.1579	0.2222
Battle Drill Area - 1	0.2778	0.2778
Battle Drill Area - 2	0.2353	0.1765
Choccolocco Creek - 1	-----	0.2778

* Similarity between samples increases as the index value approaches 1.0.

5.5 INSECTS

Analytical results and analysis of insects collected from all four sites are presented in Appendix D. There were no statistically significant differences for any compounds detected in insect tissue between exposure sites and the reference site (Table 13). Concentrations of fog oil hydrocarbons detected in insect samples were very low and not of concern.

We compared the number of insect Orders at exposure sites and the reference site. Community composition was similar among all sites (Table 12). The same taxa (orders) were present at each site (Appendix D). Simpson's Similarity Indices were greater than 0.7 when comparing community composition of reference and exposure sites (Table 12). There were more insects collected at the reference site. Site 3 had the fewest number of individuals and the fewest orders. Evenness was similar among all sites.

A major difference noted between insects at exposure sites and insects at the reference site was the number of Coleoptera. The reference site had 5 times more Coleoptera than any exposure site. There are several reasons this could occur. Habitat suitability for coleopterans may have been higher at the reference site. The reference site had more surface water habitat perfered by aquatic coleopterans than exposure sites. It is doubtful fog oil is the determining factor because other characteristics of insect populations were similar (i.e. number of orders, Simpson's Similarity Index, and eveness).

TABLE 12. Results of insects analysis performed to determine similarity of insect orders and communities collected at 4 sites.

	Site 1	Site 2	Site 3	Site 4-reference
Total Individuals	285	287	179	948
Number of Orders	11	9	8	11
Diversity	6.3484	6.3435	5.8417	7.4521
Evenness	2.6475	2.8871	2.8093	3.1078
JSC Similarity with Site 4	0.8333	0.8182	0.7273	
Index of Similarity	0.9091	0.9000	0.8421	

5.6 ANIMAL TISSUE

The analysis of bat tissue revealed significantly higher concentrations of many chemicals at exposure sites (Table 13). Hexadecane was present in greater amounts at Site 3 than the control site ($p < 0.10$). Biphenyl, Hexachloroethane, 2,6-Dimethylnaphalene, 1,3-Dimethylnaphalene, 1,2-Dimethylnaphalene, and 2,3,5-Trimethylnaphalene were present in significantly greater amounts at Site 2 ($p < 0.10$) and Site 3 ($p < 0.01$) than the control site. While this appears to be indicative of fog oil concentrating in bat tissue, the concentrations detected were very low (Appendix A). These levels were close to the detection limit and may be biochemical in origin. Different hydrocarbons may peak on chromatograms at the same retention time as the compounds being analyzed. Biological samples are high in hydrocarbon content and with such low concentrations, it is assumed these are not from fog oil but a natural component of tissue. We do not expect any of the fog oil hydrocarbons will accumulate in bat tissue.

No statistically significant differences were determined for bat guano, insect tissue, and fish tissue samples from exposure sites vs. the reference site (Table 13). Many statistical tests could not be completed because samples existed for only one site or hydrocarbon concentrations were below detection limit. The tests that could be completed showed no significant differences between the exposure sites and the reference site.

5.7 FOG OIL SMOKE SAMPLES

We detected little difference in volatile and semi-volatile organic compounds between 9 smoke samples and background air samples. We analyzed all fog oil smoke samples for any detectable organic compounds. Analyses show concentrations of parent fog oil (fog oil put into the generator to generate smoke) in the smoke samples to be >99.2%. No aromatic, volatile, or semi-volatile organic compounds were detected at concentrations >0.8% in the smoke samples.

TABLE 13. Results of fog oil component analysis for bat, fish, insect tissue and guano samples from all sites.

ANIMAL TISSUE & GUANO Chemical	Bat tissue, Site 1 v. Site 4 (t-test)	Bat tissue, Site 2 v. Site 4 (t-test)	Bat tissue, Site 3 v. Site 4 (t-test)	Bat tissue, All Sites (ANOVA)	Bat guano, Site 1 v. Site 4 (t-test)	Bat guano, Site 2 v. Site 4 (t-test)	Bat guano, Site 3 v. Site 4 (t-test)	Bat guano, All Sites (ANOVA)	Insects, Site 1 v. Site 4 (t-test)	Insects, Site 2 v. Site 4 (t-test)	Insects, Site 3 v. Site 4 (t-test)	Insects, All Sites (ANOVA)	Fish, Site 1 v. Site 4 (t-test)	Fish, Site 2 v. Site 4 (t-test)	Fish, Site 3 v. Site 4 (t-test)	Fish, All Sites (ANOVA)
Biphenyl	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA
2,6-Dimethylnaphalene	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA
1,3-Dimethylnaphalene	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA
1,2-Dimethylnaphalene	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA
Hexadecane	=	=	3>4*	=	NA	=	NA	=	=	=	=	=	NA	NA	=	=
Fluorene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
4,4'-Dimethylbiphenyl	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	=	=	=
1-Methylfluorene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
Phenanthrene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
Anthracene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
2-Methylphenanthrene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
9-Methylanthracene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
3,6-Dimethylphenanthrene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
2-Ethylanthracene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
9,10-Dimethylanthracene	=	=	=	=	NA	=	NA	=	=	=	=	=	NA	=	=	=
Hexachloroethane	=	2>4*	3>4***	3>2>1>4*	NA	=	NA	=	=	=	=	=	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)
NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)
= - There is no statistical difference between the sites;
*** - Statistically significant difference ($p < 0.01$);
** - Statistically significant difference ($p < 0.05$);
* - Statistically significant difference ($p < 0.10$);
> - Indicates which site had the greater value.

Fog oil smoke samples demonstrate a shift in the molecular weight of the unspeciated hydrocarbons when compared to parent fog oil samples. After fog oil has been heated in the generator, heavier hydrocarbons (i.e. C_{10} - C_{50}) increase in number while lighter hydrocarbons (i.e. < C_{10}) decrease. The most likely explanation for this shift in molecular weight of hydrocarbons present is volatilization. Lighter hydrocarbons volatilize to form CO_2, H_2, CO, and other atmospheric gases not measured in the smoke samples.

A summary of chromatograms, test methods, and standards for fog oil smoke samples used in the analysis are presented in Appendix F.

Section 6.0

Conclusion

1. There was little evidence that fog oil components persist in soil, sediment or surface water. Either little or no difference was observed between exposure sites and the reference site, or the reference site had higher concentrations of hydrocarbons than exposure sites.

2. The reference site was suitable for analyses based on similarity of insects, soil types, and lack of fog oil training.

3. We found no evidence of large concentrations of hydrocarbons in tissue samples. If bioaccumulation was occurring at exposure sites, organisms analyzed should have exhibited hydrocarbons in their tissue. Results of this study indicate no bioaccumulation of fog oil is occurring at Fort McClellan.

4. Fog oil smoke samples showed little change in chemical composition compared to parent fog oil. We were unable to detect any volatile or semi-volatile organics in our smoke samples. If volatilization or thermal decomposition occurs, they either result in low concentrations of decomposition or volatilization products, or only form atmospheric gases.

5. Hydrocarbons specific to fog oil were not found in significant quantities in any samples. We analyzed samples for hydrocarbons known to have a long environmental residence time. Based on our analysis, fog oil will not bioconcentrate, bioaccumulate, or biomagnify in the environment or biota at Fort Leonard Wood.

Section 7.0

Literature Cited

3D/Environmental. 1996. Biological Assessment: Relocation of U.S. Army Chemical School and Military Police School to Fort Leonard Wood, Missouri.

Ebasco Environmental. 1994. U.S. Army Chemical and Military Police Centers and Fort McClellan, Alabama Draft Environmental Impact Assessment.

EPA. 1991a. Removal Program Representative Sampling Guidance: Volume 1, Soil. Washington D.C.

EPA. 1991b. Compendium of ERT Surface Water and Sediment Sampling Procedures. Washington D.C.

EPA. 1989. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. Report No. 444/4-89-001. Washington D.C.

Gardner, J. E., J. D. Garner, and J. E. Hoffman. 1989. A portable mist netting system for capturing bats with emphasis on Myotis sodalis (Indiana bat). Bat Research News 30:1 - 8.

Hach Company. 1989. Water Analysis Book. Loveland, CO. 699 pp.

Harlin, W.V., R.B. Wingate, H.O. White, J.A. Cotton, W.B. Parker, R.B. McNutt. 1961. Soil Conservation Service, United States Department of Agriculture in Cooperation

with Alabama Department of Agriculture and Industries, and Alabama Agricultural Experiment Station.

Krueger, H. O., J. P. Ward, and S. H. Anderson. 1988. A resource manager's guide for using aquatic organisms to assess water quality for evaluation of contaminants. U. S. Fish and Wildlife Serv. Biol. Rep. 88(20).

National Institutes of Health. 1985. Guide for the care and use of laboratory animals. NIH Publication No. 86-23. U.S. Department of Health and Human Services.

NOAA. 1978. Climates of the States: National Oceanic and Atmospheric Administration narrative summaries, tables, and maps for each state, with current tables of normals, 1941-1970, means to 1975\overview of state climatologist program\Additional Material by James A. Ruffner, Volume I. 1978. Gale Research Co.

Southwood, T. R. E. 1966. Ecological Methods With Particular Reference to the Study of Insect Populations. Chapman and Hall. London, England. pp. 200 - 205.

Thornbury, W.D. 1965. Regional Geomorphology of the United States. John Wiley & Sons. New York, New York

Varnedoe, W.W. 1973. Alabama Caves and Caverns. National Speleological Society. Huntsville, Alabama.

Appendix A

Laboratory Data, Forms, and Analyses

FORT McCLELLAN SAMPLING PROCEDURES

- Every ten samples of media (soil, sediment, water), a replicate will be taken and labeled "dup" (ie. SW4-dup-#). Sample location will be the same as 10th sample.
- Be sure to keep accurate records in field notebooks
- Wear gloves at all times to avoid contamination
- Do not wear aftershave or lotion

SAMPLE IDENTIFICATION AT EACH SITE

SITE 1 - RANGE 24A - (exposure)

Tissues

mammals	TM1 - (capture #)
bat guano	TM1 - G (capture#)
insects (black light)	TI1 - B - (sample #)
insect (white light)	TI1 - W -(sample#)
fish	TF1 - (number)
vegetation	TV1 - (sample location)

Surface Water — SW1 - (sample location)

Sediment — SD1 - (sample location)

Soil

surface (0-3")	SU1 - (sample location)
middle (3-12")	SM1 - (sample location)
bottom (12"-3')	SB1 - (sample location)

SITE 2 - RANGE 56 - (exposure)

Tissues

mammals	TM2 - (capture #)
guano	TM2 - G - (capture#)
insects (black light)	TI2 - B - (sample #)
insect (white light)	TI2 - W -(sample#)
fish	TF2 - (number)
vegetation	TV2 - (sample location)

Surface Water — SW2 - (sample location)

Sediment — SD2 - (sample location)

Soil	surface (0-3")	SU2 - (sample location)
	middle (3-12")	SM2 - (sample location)
	bottom (12"-3')	SB2 - (sample location)

SITE 3 - BATTLE DRILL AREA - (exposure)

Tissues		
	mammals	TM3 - (capture #)
	bat guano	TM3 - G (capture#)
	insects (black light)	TI3 - B - (sample #)
	insect (white light)	TI3 - W -(sample#)
	fish	TF3 - (number)
	vegetation	TV3 - (sample location)
Surface Water		SW3 - (sample location)
Sediment		SD3 - (sample location)
Soil	surface (0-3")	SU3 - (sample location)
	middle (3-12")	SM3 - (sample location)
	bottom (12"-3')	SB3 - (sample location)

SITE 4 - RANGE 13 (control/reference site)

Tissues		
	mammals	TM4 - (capture #)
	guano	TM4 - G - (capture#)
	insects (black light)	TI4 - B - (sample #)
	insect (white light)	TI4 - W -(sample#)
	fish	TF4 - (number)
	vegetation	TV4 - (sample location)
Surface Water		SW4 - (sample location)
Sediment		SD4 - (sample location)
Soil	surface (0-3")	SU4 - (sample location)

middle (3-12")	SM4 - (sample location)
bottom (12"-3')	SB4 - (sample location)

Site 1-soil

Sample Name		Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Range 24a											
42818-044 SU1-1-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-022 SM1-1-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0680	<0.05
42818-045 SU1-2-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-046 SU1-2d-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-023 SM1-2-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-003 SB1-2-816		<0.05	<0.05	<0.05	<0.05	<0.05	0.631	<0.05	<0.05	<0.05	<0.05
42818-047 SU1-3-816		<0.05	<0.05	0.245	<0.05	<0.05	0.0891	<0.05	<0.05	<0.05	<0.05
42818-024 SM1-3-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-004 SB1-3-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-048 SU1-4-816		<0.05	<0.05	0.373	<0.05	<0.05	0.194	<0.05	0.0827	<0.05	<0.05
42818-026 SM1-4-816		<0.05	<0.05	<0.05	<0.05	<0.05	0.0556	<0.05	<0.05	0.0859	0.0564
42818-005 SB1-4-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0748	<0.05
42818-050 SU1-5-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-027 SM1-5-816		<0.05	<0.05	<0.05	<0.05	<0.05	0.486	<0.05	<0.05	<0.05	<0.05
42818-028 SM1-5d-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-006 SB1-5-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-051 SU1-6-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-029 SM1-6-816		<0.05	<0.05	<0.05	<0.05	<0.05	0.436	<0.05	<0.05	<0.05	<0.05
42818-007 SB1-6-816		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Site 1-soil

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 24a							
42818-044 SU1-1-816	<0.05	<0.05	<0.05	<0.05	0.0535	<0.05	<0.05
42818-022 SM1-1-816	0.0519	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-045 SU1-2-816	<0.05	<0.05	<0.05	<0.05	0.185	<0.05	<0.05
42818-046 SU1-2d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-023 SM1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-003 SB1-2-816	<0.05	<0.05	<0.05	<0.05	0.0816	<0.05	<0.05
42818-047 SU1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.154
42818-024 SM1-3-816	<0.05	0.0775	<0.05	<0.05	0.126	<0.05	<0.05
42818-004 SB1-3-816	<0.05	<0.05	<0.05	<0.05	0.0721	<0.05	<0.05
42818-048 SU1-4-816	<0.05	<0.05	<0.05	<0.05	0.0978	<0.05	0.285
42818-026 SM1-4-816	0.127	0.0973	0.0515	<0.05	0.0840	<0.05	0.940
42818-005 SB1-4-816	<0.05	<0.05	<0.05	<0.05	0.0614	<0.05	<0.05
42818-050 SU1-5-816	<0.05	<0.05	<0.05	<0.05	0.0513	<0.05	<0.05
42818-027 SM1-5-816	<0.05	<0.05	<0.05	<0.05	0.0626	<0.05	0.0951
42818-028 SM1-5d-816	<0.05	<0.05	<0.05	<0.05	0.0538	<0.05	0.259
42818-006 SB1-5-816	<0.05	<0.05	<0.05	<0.05	0.0666	<0.05	<0.05
42818-051 SU1-6-816	<0.05	<0.05	<0.05	<0.05	0.0514	<0.05	0.143
42818-029 SM1-6-816	<0.05	<0.05	<0.05	<0.05	0.0604	<0.05	0.410
42818-007 SB1-6-816	<0.05	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05

Site 1-water

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	1.10	<1.0	1.92	<1.0	<1.0	<1.0	1.03
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	1.92	<1.0	<1.0	<1.0	<1.0
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	4.05	<1.0	<1.0	<1.0	1.29
Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane					
Range 24a											
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					

Site 1-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-100 SD1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-102 SD1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 24a						
42818-100 SD1-1-816	<0.05	<0.05	<0.05	0.133	<0.05	0.0562
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.133
42818-102 SD1-3-816	0.147	<0.05	0.198	0.422	<0.05	<0.05
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845

Site 1- veg

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-264 SV1-2-816	0.898	<0.05	0.250	<0.05	0.0645	0.0786	0.101	0.0647	0.122	0.120	0.114
42818-265 SV1-3-816	0.253	<0.05	0.800	0.268	1.137	0.240	0.0920	<0.05	0.111	0.159	0.0949
42818-266 SV1-1-816	0.0673	0.234	0.675	2.856	1.548	0.870	0.492	0.347	0.158	0.314	0.160
Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane					
Range 24a											
42818-264 SV1-2-816	0.299	0.289	0.243	0.358	0.516	<0.05					
42818-265 SV1-3-816	0.245	0.244	0.160	2.779	0.190	<0.05					
42818-266 SV1-1-816	0.309	0.327	0.278	0.377	0.369	<0.05					

Site 1-animal

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
Insects											
42818-251 TI1-808	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
42818-253 TI1-809	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.0429	<0.03
Bats											
42818-291 TM1-1-808	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.236	<0.09	0.290	0.172	0.0988
42818-292 TM1-2-809	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0659	<0.04	0.0454	0.0911	0.0430

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 24a						
Insects						
42818-251 TI1-808	<0.50	<0.50	<0.50	1.318	<0.50	<0.50
42818-253 TI1-809	<0.03	<0.03	0.0393	0.0868	<0.03	<0.03
Bats						
42818-291 TM1-1-808	0.221	0.323	0.169	0.525	<0.09	<0.09
42818-292 TM1-2-809	0.0843	0.0689	0.149	0.284	<0.04	<0.04

Site 2-soil

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-052 SU2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-030 SM2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-008 SB2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-053 SU2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05
42818-031 SM2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.341	<0.05	<0.05	0.0764	<0.05	0.0871
42818-009 SB2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-053 SU2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-032 SM2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.367	<0.05	<0.05	<0.05	<0.05	<0.05
42818-010 SB2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-055 SU2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-056 SU2-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-033 SM2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.274	<0.05	<0.05	0.0735	<0.05	0.0898
42818-011 SB2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.127	<0.05	<0.05	<0.05	<0.05	<0.05
42818-057 SU2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-034 SM2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	<0.05	<0.05	<0.05	<0.05
42818-012 SB2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.780	<0.05	<0.05	<0.05	<0.05	<0.05
42818-058 SU2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-035 SM2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.155	<0.05	<0.05	<0.05	<0.05	0.0771
42818-014 SB2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Site 2-soil

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane	
Range 56							
42818-052 SU2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
42818-030 SM2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.446	
42818-008 SB2-1-816	<0.05	<0.05	<0.05	0.0558	<0.05	<0.05	
42818-053 SU2-2-816	<0.05	<0.05	<0.05	0.134	<0.05	<0.05	
42818-031 SM2-2-816	0.0655	<0.05	<0.05	0.0614	<0.05	0.370	
42818-009 SB2-2-816	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05	
42818-053 SU2-3-816	<0.05	<0.05	<0.05	0.0515	<0.05	0.184	
42818-032 SM2-3-816	<0.05	<0.05	<0.05	0.0542	<0.05	0.286	
42818-010 SB2-3-816	<0.05	<0.05	<0.05	0.0544	<0.05	<0.05	
42818-055 SU2-4-816	<0.05	<0.05	<0.05	0.0559	<0.05	<0.05	
42818-056 SU2-4d-816	<0.05	<0.05	<0.05	0.0537	<0.05	0.0966	
42818-033 SM2-4-816	0.0870	<0.05	<0.05	<0.05	<0.05	0.772	
42818-011 SB2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
42818-057 SU2-5-816	<0.05	<0.05	<0.05	0.0542	<0.05	0.170	
42818-034 SM2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0713	
42818-012 SB2-5-816	<0.05	<0.05	<0.05	0.0650	<0.05	<0.05	
42818-058 SU2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0926	
42818-035 SM2-6-816	0.0620	<0.05	<0.05	0.0707	<0.05	1.798	
42818-014 SB2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

Site 2-water

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0.00	<1.0	0.00	0	0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-212 SW2-7-815	<1.0	<1.0	<1.0	<1.0	0.00	<1.0	0	<1.0	0	0	0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	<1.0	<1.0	<1.0	0.00	<1.0	0	<1.0	<1.0	<1.0	0

Site 2-water

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 56						
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-212 SW2-7-815	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	0	<1.0	<1.0	<1.0	<1.0

Site 2-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-088 SD2-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-089 SD2-1d-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-090 SD2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-091 SD2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-092 SD2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-093 SD2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.377	<0.05	<0.05	<0.05	<0.05	<0.05
42818-094 SD2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-095 SD2-7-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-096 SD2-8-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.673	<0.05	<0.05	0.0639	<0.05	<0.05
42818-097 SD2-9-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Site 2-sedmnt

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 56						
42818-088 SD2-1-815	<0.05	<0.05	<0.05	0.109	<0.05	0.0603
42818-089 SD2-1d-815	<0.05	<0.05	<0.05	0.118	<0.05	0.183
42818-090 SD2-2-815	<0.05	<0.05	<0.05	0.0680	<0.05	<0.05
42818-091 SD2-3-815	<0.05	<0.05	<0.05	0.0972	<0.05	0.190
42818-092 SD2-4-815	<0.05	<0.05	<0.05	0.184	<0.05	0.490
42818-093 SD2-5-815	<0.05	<0.05	<0.05	0.231	<0.05	<0.05
42818-094 SD2-6-815	<0.05	<0.05	<0.05	0.143	<0.05	0.455
42818-095 SD2-7-815	<0.05	<0.05	<0.05	0.112	<0.05	0.200
42818-096 SD2-8-815	<0.05	<0.05	<0.05	0.147	<0.05	0.259
42818-097 SD2-9-815	<0.05	<0.05	<0.05	0.137	<0.05	<0.05

Site 2-veg

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-267 TV2-1-815	<0.05	0.0654	8.408	<0.05	0.0833	0.169	0.0985	0.0983	0.109	0.142	<0.05
42818-268 TV2-2-815	0.0833	0.0817	0.326	<0.05	0.292	0.304	0.280	0.212	0.579	0.910	0.243
42818-269 TV2-3-815	<0.04	<0.04	0.0655	<0.04	<0.04	<0.04	0.148	0.0530	0.0915	0.101	0.0434

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane					
Range 56											
42818-267 TV2-1-815	0.207	0.154	0.189	0.359	0.149	<0.05					
42818-268 TV2-2-815	2.174	<0.05	0.300	4.493	0.122	<0.05					
42818-269 TV2-3-815	0.138	0.171	0.0984	0.175	0.0833	<0.04					

Site 2-animal

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
Insects											
42818-259 TI2-812	<0.05	<0.05	0.0557	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-260 TI2-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0566	<0.05	<0.05	0.0648	0.0695
Bats											
42818-299 TM2-1-812	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0864	<0.04	0.0665	0.117	0.0592
42818-300 TM2-11-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0653	<0.05
42818-301 TM2-2-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.115	<0.10	<0.10	0.131	<0.10
42818-303 TM2-3-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.131	<0.10	0.248	0.471	0.127
42818-304 TM2-4-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.169	<0.10	0.241	0.439	0.136
42818-305 TM2-5-812	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.0850	<0.07	<0.07	0.0931	0.0742
42818-307 TM2-1-813	<0.10	<0.10	<0.10	<0.10	<0.10	0.116	0.263	0.162	0.317	0.519	0.159
42818-312 TM2-G-812	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
42818-313 TM2-G-813	<17.0	<17.0	<17.0	<17.0	<17.0	<17.0	18.893	<17.0	17.309	<17.0	<17.0
42818-314 TM2-6-812	<0.05	<0.05	<0.05	<0.05	<0.05	0.0509	0.112	<0.05	0.122	0.203	0.0707
Fish											
42818-278 TF2-1a-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.317	<0.05	0.0644	0.129	0.0651
42818-279 TF2-1b-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0770	<0.05	0.0580	0.119	0.0568
42818-280 TF2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0695	0.340	0.0987	0.261	0.433	0.1215
42818-281 TF2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.283	<0.05	0.101	0.169	0.0853
42818-282 TF2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.234	<0.05	<0.05	0.0885	<0.05
42818-283 TF2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0621	0.333	0.0803	0.202	0.344	0.0952
42818-284 TF2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.210	<0.05	<0.05	0.0775	<0.05

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 56						
Insects						
42818-259 TI2-812	<0.05	<0.05	<0.05	0.115	<0.05	<0.05
42818-260 TI2-813	0.0510	<0.05	0.0908	0.128	<0.05	<0.05
Bats						
42818-299 TM2-1-812	0.135	0.121	0.124	0.285	<0.04	<0.04
42818-300 TM2-11-812	0.105	0.142	0.163	0.318	<0.05	<0.05
42818-301 TM2-2-812	0.189	0.122	0.249	0.489	0.252	<0.10
42818-303 TM2-3-812	0.275	0.764	0.239	1.150	<0.10	<0.10
42818-304 TM2-4-812	0.334	0.607	0.211	1.368	<0.10	<0.10
42818-305 TM2-5-812	0.148	0.270	0.135	0.294	<0.07	<0.07
42818-307 TM2-1-813	0.370	0.862	0.225	1.363	<0.10	<0.10
42818-312 TM2-G-812	<6.0	<6.0	6.444	12.616	<6.0	<6.0
42818-313 TM2-G-813	<17.0	21.983	<17.0	61.308	<17.0	<17.0
42818-314 TM2-6-812	0.168	0.340	0.116	0.627	<0.05	<0.05
Fish						
42818-278 TF2-1a-815	0.126	0.125	0.119	0.259	<0.05	<0.05
42818-279 TF2-1b-815	0.108	0.0554	0.139	0.295	0.142	<0.05
42818-280 TF2-2-815	0.275	0.403	0.190	0.981	<0.05	<0.05
42818-281 TF2-3-815	0.283	0.122	0.252	0.450	0.251	<0.05
42818-282 TF2-4-815	0.0731	0.0619	0.0534	0.199	<0.05	<0.05
42818-283 TF2-5-815	0.233	0.338	0.131	0.761	0.0720	<0.05
42818-284 TF2-6-815	0.0891	0.0565	0.0736	0.167	<0.05	<0.05

Site 3-soil

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-059 SU3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-036 SM3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-062 SU3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-040 SM3-3-816	<0.05	<0.05	0.0670	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-064 SU3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0678	<0.05	0.0641
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0735	<0.05	<0.05

Site 3-soil

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Battle Drill						
42818-059 SU3-1-816	<0.05	<0.05	<0.05	0.0736	<0.05	<0.05
42818-036 SM3-1-816	<0.05	<0.05	<0.05	0.0443	<0.05	0.398
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	0.0843	<0.05	0.197
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-062 SU3-3-816	<0.05	<0.05	<0.05	0.0656	<0.05	0.0954
42818-040 SM3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	0.0521	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	0.0500	<0.05	<0.05
42818-064 SU3-5-816	<0.05	<0.05	<0.05	0.0649	<0.05	<0.05
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	0.0510	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.460
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	0.0505	<0.05	<0.05

Site 3-water

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.14	<1.0	<1.0	<1.0	<1.0
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	4.08	<1.0	<1.0	<1.0	<1.0
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	2.26	<1.0	9.43	<1.0	1.25	1.23	2.75
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.66	<1.0	<1.0	<1.0	<1.0
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	1.32	<1.0	3.70	<1.0	<1.0	<1.0	<1.0
Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane					
Battle Drill											
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					

Site 3-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.237	<0.05	<0.05	<0.05	0.0605	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0637	<0.05
42818-106 SD3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0847	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.536	<0.05	<0.05	<0.05	<0.05	<0.05

Site 3-sedmnt

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Battle Drill						
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-106 SD3-4-816	0.0784	<0.05	<0.05	0.163	<0.05	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0985
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.112
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.247
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.137

Site 3-veg

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-270 TV3-1-815	<0.05	<0.05	0.206	<0.05	<0.05	0.0643	0.117	<0.05	0.0900	<0.05	0.0662
42818-271 TV3-2-815	<0.05	<0.05	0.0919	0.0614	0.0667	0.0526	0.179	0.153	0.309	0.513	0.157
42818-272 TV3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	0.0870	0.101	0.0607

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Battle Drill						
42818-270 TV3-1-815	0.186	0.233	0.141	0.233	0.103	<0.05
42818-271 TV3-2-815	0.383	0.696	0.176	0.888	0.173	<0.05
42818-272 TV3-3-815	0.168	0.226	0.123	0.202	0.0530	<0.05

Site 3-animal

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
Insects											
42818-255 TI3-810	<0.04	<0.04	0.040	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
42818-257 TI3-811	<0.06	0.0659	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0601
Bats											
42818-297 TM3-6-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.0983	0.152	0.113	0.267	0.480	0.141
42818-293 TM3-1-809	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.105	<0.10	<0.10	0.156	<0.10
42818-294 TM3-2-810	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.132	<0.10	<0.10	0.156	<0.10
Fish											
42818-285 TF3-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.172	<0.05	<0.05	0.0539	0.0569
42818-286 TF3-2-815	<0.05	<0.05	<0.05	<0.05	0.0635	0.0761	0.348	0.0898	0.193	0.316	0.100
42818-287 TF3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	<0.05	<0.05	<0.05
42818-288 TF3-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0710	0.361	0.0949	0.196	0.321	0.0737
42818-289 TF3-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.229	<0.05	<0.05	<0.05	<0.05

Site 3-animal

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Battle Drill						
Insects						
42818-255 TI3-810	0.0679	<0.04	<0.04	0.110	<0.04	<0.04
42818-257 TI3-811	<0.06	<0.06	<0.06	0.150	<0.06	<0.06
Bats						
42818-297 TM3-6-811	0.283	0.732	0.209	0.818	0.0844	<0.08
42818-293 TM3-1-809	0.247	0.238	0.326	0.551	<0.10	<0.10
42818-294 TM3-2-810	0.207	0.225	0.184	0.514	<0.10	<0.10
Fish						
42818-285 TF3-1-815	0.0578	<0.05	<0.05	0.119	<0.05	<0.05
42818-286 TF3-2-815	0.181	0.313	0.119	0.669	<0.05	<0.05
42818-287 TF3-3-815	0.0664	0.0612	0.0607	0.141	<0.05	<0.05
42818-288 TF3-4-815	0.213	0.301	0.132	0.682	0.0513	<0.05
42818-289 TF3-5-815	0.0559	0.0659	<0.05	0.185	<0.05	<0.05

Site 4-soil

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0660	<0.05
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0526
42818-081 SU4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.315	<0.05	<0.05	0.0756	<0.05
42818-075 SM4-2-817	<0.05	<0.05	0.166	<0.05	<0.05	0.0853	<0.05	<0.05	0.0517	<0.05
42818-067 SB4-2-817	<0.05	<0.05	0.0641	<0.05	<0.05	<0.05	<0.05	<0.05	0.0522	<0.05
42818-068 SB4-2d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-082 SU4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0575	<0.05
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0517	<0.05
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0704	<0.05
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-084 SU4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.479	<0.05	<0.05	<0.05	<0.05
42818-078 SM4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0827	<0.05
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-086 SU4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0529	0.0526
42818-087 SU4-6d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.225	<0.05	<0.05	0.0912	0.104
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	1.307	<0.05	<0.05	<0.05	<0.05

Site 4-soil

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane	
Reference - Choccolocco								
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	0.227	0.105	0.228	
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	0.0546	<0.05	0.0787	
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
42818-081 SU4-2-817	<0.05	<0.05	0.0514	<0.05	0.440	0.0764	0.238	
42818-075 SM4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.187	
42818-067 SB4-2-817	<0.05	<0.05	<0.05	<0.05	0.209	<0.05	0.101	
42818-068 SB4-2d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.296	
42818-082 SU4-3-817	<0.05	<0.05	<0.05	<0.05	0.276	0.0542	0.132	
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	0.0560	<0.05	0.195	
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	0.217	<0.05	<0.05	
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	0.209	
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	0.0750	<0.05	0.302	
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	0.145	<0.05	0.0693	
42818-084 SU4-5-817	<0.05	<0.05	<0.05	0.0502	0.230	<0.05	0.123	
42818-078 SM4-5-817	<0.05	0.0756	0.0530	<0.05	0.131	<0.05	0.430	
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	0.148	<0.05	<0.05	
42818-086 SU4-6-817	<0.05	0.0647	<0.05	<0.05	<0.05	<0.05	0.199	
42818-087 SU4-6d-817	<0.05	<0.05	<0.05	<0.05	0.0902	<0.05	0.0656	
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	0.221	<0.05	0.171	
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	0.138	<0.05	<0.05	

Site 4-water

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-223 SW4-3-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	0	0
42818-224 SW4-4-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0.00	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	<1.0	<1.0	<1.0	<1.0	0	0	0.00	<1.0	0	<1.0
42818-227 SW4-7-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-228 SW4-7d-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-230 SW4-9-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0

Site 4-water

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-223 SW4-3-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-224 SW4-4-817	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-227 SW4-7-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-228 SW4-7d-817	0.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	0	<1.0	<1.0	<1.0	0.00	<1.0	<1.0
42818-230 SW4-9-817	0.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Site 4-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-114 SD4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.345	<0.05	<0.05	<0.05	<0.05
42818-115 SD4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.454	<0.05	<0.05	<0.05	<0.05
42818-116 SD4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.366	<0.05	<0.05	<0.05	<0.05
42818-117 SD4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.426	<0.05	<0.05	<0.05	<0.05
42818-118 SD4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.247	<0.05	<0.05	<0.05	<0.05
42818-119 SD4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.255	<0.05	<0.05	<0.05	<0.05
42818-120 SD4-7-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-121 SD4-7d-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.208	<0.05	<0.05	<0.05	<0.05
42818-122 SD4-8-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-123 SD4-9-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0781	<0.05
42818-124 SD4-10-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
42818-114 SD4-1-817	<0.05	<0.05	<0.05	<0.05	0.0586	<0.05	0.421
42818-115 SD4-2-817	<0.05	<0.05	<0.05	<0.05	0.0707	<0.05	0.374
42818-116 SD4-3-817	<0.05	<0.05	<0.05	<0.05	0.0669	<0.05	<0.05
42818-117 SD4-4-817	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.0732
42818-118 SD4-5-817	<0.05	<0.05	<0.05	<0.05	0.108	<0.05	<0.05
42818-119 SD4-6-817	<0.05	<0.05	<0.05	<0.05	0.105	<0.05	0.164
42818-120 SD4-7-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-121 SD4-7d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-122 SD4-8-817	<0.05	0.0668	<0.05	<0.05	0.0790	<0.05	<0.05
42818-123 SD4-9-817	0.0608	0.0524	<0.05	<0.05	0.0586	<0.05	<0.05
42818-124 SD4-10-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0815

Site 4-veg

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-273 SV4-1-817	0.133	<0.05	0.149	<0.05	<0.05	0.0735	0.183	0.0734	0.102	0.0666
42818-274 SV4-2-817	<0.05	<0.05	0.0526	<0.05	<0.05	0.0683	0.0706	<0.05	0.0963	0.130
42818-275 SV4-3-817	<0.05	<0.05	0.0525	0.0656	<0.05	0.0671	0.183	0.0862	0.150	0.226

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
42818-273 SV4-1-817	<0.05	0.149	0.144	0.111	0.224	0.0739	<0.05
42818-274 SV4-2-817	<0.05	0.173	0.177	0.173	0.306	0.139	<0.05
42818-275 SV4-3-817	0.128	0.278	0.401	0.186	0.356	0.114	<0.05

Site 4-animal

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
Insects										
42818-252 TI4-808	<0.10	<0.10	<0.10	<0.10	<0.10	0.107	<0.10	<0.10	<0.10	0.102
42818-254 TI4-809	<0.10	<0.10	<0.10	<0.10	<0.10	0.103	<0.10	<0.10	<0.10	0.102
42818-256 TI4-810	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
42818-258 TI4-811	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0636	<0.06	<0.06	<0.06
42818-261 TI4-812	<0.05	<0.05	0.0632	<0.05	<0.05	<0.05	0.0536	<0.05	<0.05	0.0753
42818-262 TI4-813	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Bats										
42818-306 TM4-1-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0684	<0.05	0.0798	0.126
42818-308 TM4-1-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0731
42818-309 TM4-2-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0773	0.142
42818-310 TM4-3-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05	<0.05
42818-311 TM4-G2-808	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
42818-295 TM4-1-809	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0893	<0.05	<0.05	0.0534
42818-296 TM4-1-810	<0.03	<0.03	0.0361	<0.03	<0.03	<0.03	0.0488	0.0259	0.0573	0.174
42818-298 TM4-1-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.134	0.241	<0.08	0.428	0.801
Fish										
42818-277 TF4-1-814	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.106	0.133

Site 4-animal

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
Insects							
42818-252 TI4-808	<0.10	<0.10	0.116	<0.10	0.307	<0.10	<0.10
42818-254 TI4-809	0.115	<0.10	<0.10	<0.10	0.292	<0.10	<0.10
42818-256 TI4-810	<0.04	<0.04	<0.04	<0.04	0.0813	0.0417	<0.04
42818-258 TI4-811	<0.06	<0.06	<0.06	<0.06	0.164	<0.06	<0.06
42818-261 TI4-812	0.0767	0.0798	<0.05	<0.05	0.0893	<0.05	<0.05
42818-262 TI4-813	<0.07	<0.07	<0.07	<0.07	0.160	<0.07	<0.07
Bats							
42818-306 TM4-1-812	0.0549	0.186	0.224	0.232	0.497	0.326	<0.05
42818-308 TM4-1-813	<0.06	0.105	0.0924	0.130	0.284	0.170	<0.06
42818-309 TM4-2-813	<0.06	0.114	0.262	0.0826	0.313	<0.06	<0.06
42818-310 TM4-3-813	0.0509	0.0661	0.116	0.0646	0.152	<0.05	<0.05
42818-311 TM4-G2-808	<10.0	15.424	17.517	18.722	35.409	<10.0	<10.0
42818-295 TM4-1-809	<0.05	0.0578	0.0809	<0.05	0.125	<0.05	<0.05
42818-296 TM4-1-810	0.0564	0.0900	0.190	0.0862	0.448	0.0604	<0.03
42818-298 TM4-1-811	0.196	0.503	1.163	0.336	2.172	0.118	<0.08
Fish							
42818-277 TF4-1-814	0.0520	0.156	0.180	0.113	0.356	<0.05	<0.05

~~Pan-Ag Labs (Environmental Chemistry Analysis)~~
~~32380 Avenue 10 - Madera, California 93638~~
~~(209) 675-0880 - (800) 846-0008 - FAX (209) 675-0884~~

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name:
Address:
City, State, Zip:
Phone:
Fax #:

REPORT INFORMATION

Report Attention:
Project, P.O. #:
Project Name:
Project Manager:
Copy To:

REQUESTED ANALYSES

LAB USE ONLY

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL								

Turnaround Time:
_____ Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
_____ Rush 5 Day
_____ Rush 3 Day
_____ Rush 2 Day
_____ Rush 1 Day

Comments:

ARE SAMPLES:
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS:
☐ STLC ☐ TTLC

Signature	Date	Time	Printed Name	Company Name
Relinquished By:		am pm		
Received By:		am pm		
Relinquished By:		am pm		
Received By:		am pm		
Received for Laboratory By:		am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

The following shows the quantifying and qualifying ion(s) for each analyte:

Analyte	Quantifying ion	Qualifying ion(s)	
Biphenyl	154.1	76.0	
2,6-Dimethylnaphthalene	156.1	141.1	
1,3-Dimethylnaphthalene	141.1	156.1	
1,2-Dimethylnaphthalene	141.1	156.1	
2,3,5-Trimethylnaphthalene	170.1	155.1	
Hexadecane	71.0	85.0	226.1
Fluorene	166.1	165.1	
4,4'-Dimethylbiphenyl	182.1	167.1	
1-Methylfluorene	165.1	180.1	
Phenanthrene	178.1	152.1	
Anthracene	178.1	152.1	
2-Methylphenanthrene	192.1	165.1	
9-Methylanthracene	192.1	165.1	
3,6-Dimethylphenanthrene	206.1	191.1	
2-Ethylanthracene	206.1	191.1	
9,10-Dimethylanthracene	206.1	191.1	
Hexachloroethane	201.0	166.1	

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocethane
42818-001 CONTROL	0	0	0	0.0139	0	0	0	0.00721	0.0175	0.0130	0	0	0	0.0135	0.0853	0	0
42818-002 C + 0.10 PPM	0.0419	0.0370	0.0334	0.0516	0.0596	0.0610	0.0976	0.0768	0.0906	0.0936	0.0909	0.125	0.0791	0.118	0.164	0.0273	NA
42818-002 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00396
% RECOVERY	41.9	37.0	33.4	37.7	59.6	61.0	97.6	69.6	73.1	80.6	90.9	125	79.1	105	78.7	27.3	39.6
42818-003 SB1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.631	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0816	<0.05	<0.05
42818-004 SB1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0721	<0.05	<0.05
42818-005 SB1-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0748	<0.05	<0.05	<0.05	<0.05	<0.05	0.0614	<0.05	<0.05
42818-006 SB1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0666	<0.05	<0.05
42818-007 SB1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-008 SB2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0558	<0.05	<0.05
42818-009 SB2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05
42818-010 SB2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0544	<0.05	<0.05
42818-011 SB2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.127	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-012 SB2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.780	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0650	<0.05	<0.05
42818-013 C + 1.00 PPM	0.520	0.408	0.389	0.436	0.557	0.651	0.665	0.650	0.701	0.729	0.703	0.802	0.707	0.828	0.803	0.479	NA
42818-013 C + 0.050 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0148
% RECOVERY	52.0	40.8	38.9	43.6	55.7	65.1	66.5	65.0	70.1	72.9	70.3	80.2	70.7	82.8	80.3	47.9	29.6
42818-014 SB2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclohexane
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0521	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0678	<0.05	0.0641	<0.05	<0.05	<0.05	0.0500	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0510	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0735	<0.05	<0.05	<0.05	<0.05	<0.05	0.0505	<0.05	<0.05
42818-022 SM1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0680	<0.05	0.0519	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-023 SM1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-024 SM1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0775	<0.05	<0.05	0.126	<0.05	<0.05
42818-025 C + 0.10 PPM	0.0751	0.0742	0.0643	0.0757	0.0736	0.0458	0.0822	0.102	0.110	0.111	0.103	0.135	0.105	0.127	0.155	0.0735	NA
42818-025 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000655
% RECOVERY	75.1	74.2	64.3	75.7	73.6	45.8	82.2	102	110	111	103	135	105	127	155	73.5	6.55
42818-026 SM1-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0556	<0.05	<0.05	0.0859	0.0564	0.127	0.0973	0.0515	<0.05	0.0840	<0.05	0.940
42818-027 SM1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.486	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0626	<0.05	0.0951
42818-028 SM1-5d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0538	<0.05	0.259
42818-029 SM1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.436	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0604	<0.05	0.410
42818-030 SM2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.446
42818-031 SM2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.341	<0.05	<0.05	0.0764	<0.05	0.0871	0.0655	<0.05	<0.05	0.0614	<0.05	0.370
42818-032 SM2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.367	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0542	<0.05	0.286
42818-033 SM2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.274	<0.05	<0.05	0.0735	<0.05	0.0898	0.0870	<0.05	<0.05	<0.05	<0.05	0.772
42818-034 SM2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0713
42818-035 SM2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.155	<0.05	<0.05	<0.05	<0.05	0.0771	0.0620	<0.05	<0.05	0.0707	<0.05	1.798

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-036 SM3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0443	<0.05	0.398
42818-037 C + 0.010 PPM	0.00854	0.0134	0.00707	0.0124	0.00970	0.0226	0.0166	0.0158	0.0201	0.0175	0.0235	0.0304	0.0171	0.0140	0.0279	0.0103	NA
42818-037 C + 0.001 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000428
% RECOVERY	85.4	134	70.7	124	97.0	226	166	158	201	175	235	304	171	140	279	103	42.8
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-040 SM3-3-816	<0.05	<0.05	0.0670	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4 816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-044 SU1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0535	<0.05	<0.05
42818-045 SU1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.185	<0.05	<0.05
42818-046 SU1-2d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-047 SU1-3-816	<0.05	<0.05	0.245	<0.05	<0.05	0.0891	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.154
42818-048 SU1-4-816	<0.05	<0.05	0.373	<0.05	<0.05	0.194	<0.05	0.0827	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0978	<0.05	0.285
42818-049 C + 0.10 PPM	0.0626	0.0642	0.0607	0.0689	0.0678	0.107	0.0833	0.0845	0.0936	0.101	0.105	0.127	0.0989	0.122	0.130	0.0606	NA
42818-049 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00343
% RECOVERY	62.6	64.2	60.7	68.9	67.8	107	83.3	84.5	93.6	101	105	127	98.9	122	130	60.6	34.3
42818-050 SU1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0513	<0.05	<0.05
42818-051 SU1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0514	<0.05	0.143

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-052 SU2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-053 SU2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.134	<0.05	<0.05
42818-053 SU2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0515	<0.05	0.184
42818-055 SU2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0559	<0.05	<0.05
42818-056 SU2-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0537	<0.05	0.0966
42818-057 SU2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0542	<0.05	0.170
42818-058 SU2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0926
42818-059 SU3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0736	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0843	<0.05	0.197
42818-061 C + 0.10 PPM	0.0685	0.0715	0.0691	0.0767	0.0744	0.0945	0.0860	0.0839	0.0848	0.0916	0.0891	0.107	0.0841	0.104	0.111	0.0463	NA
42818-061 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00355
% RECOVERY	68.5	71.5	69.1	76.7	74.4	94.5	86.0	83.9	84.8	91.6	89.1	107	84.1	105.0	111	46.3	35.5
42818-062 SU3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0656	<0.05	0.0954
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-064 SU3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0649	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.460
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0526	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-067 SB4-2-817	<0.05	<0.05	0.0641	<0.05	<0.05	<0.05	<0.05	<0.05	0.0522	<0.05	<0.05	<0.05	<0.05	<0.05	0.209	<0.05	0.101
42818-068 SB4-2d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.296
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.217	<0.05	<0.05
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.145	<0.05	0.0693

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.148	<0.05	<0.05
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	1.307	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.138	<0.05	<0.05
42818-073 C + 0.10 PPM	0.0130	0.0135	0.0108	0.0221	0.0151	0.0385	0.0230	0.0283	0.0682	0.0238	0.0242	0.0228	0.0675	0.0272	0.0552	0.0243	NA
42818-073 C + 0.001 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000546
% RECOVERY	13.0	13.5	10.8	22.1	15.1	38.5	23.0	28.3	68.2	23.8	24.2	22.8	67.5	27.2	55.2	24.3	54.6
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0546	<0.05	0.0787
42818-075 SM4-2-817	<0.05	<0.05	0.166	<0.05	<0.05	0.0853	<0.05	<0.05	0.0517	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.187
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0517	<0.05	<0.05	<0.05	<0.05	<0.05	0.0560	<0.05	0.195
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0704	<0.05	<0.05	<0.05	<0.05	<0.05	0.0750	<0.05	0.302
42818-078 SM4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0827	<0.05	<0.05	0.0756	0.0530	<0.05	0.131	<0.05	0.430
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.225	<0.05	<0.05	0.0912	0.104	<0.05	<0.05	<0.05	<0.05	0.221	<0.05	0.171
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0660	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	0.105	0.228
42818-081 SU4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.315	<0.05	<0.05	0.0756	<0.05	<0.05	<0.05	0.0514	<0.05	0.440	0.0764	0.238
42818-082 SU4-3-81	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0575	<0.05	<0.05	<0.05	<0.05	<0.05	0.276	0.0542	0.132
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	0.209
42818-084 SU4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.479	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0502	0.230	<0.05	0.123
42818-085 C + 0.050 PPM	0.0441	0.0479	0.0470	0.0647	0.0588	0.0363	0.0604	0.0656	0.143	0.509	0.128	0.241	0.0898	0.0981	0.189	0.0393	NA
42818-085 C + 0.005 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00135
% RECOVERY	88.2	95.7	94.0	129	118	72.6	121	131	286	1018	256	482	180	196	378	78.6	27.0
42818-086 SU4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0529	0.0526	<0.05	0.0647	<0.05	<0.05	<0.05	<0.05	0.199

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-087 SU4-6d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0902	<0.05	0.0656
42818-088 SD2-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.109	<0.05	0.0603
42818-089 SD2-1d-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.118	<0.05	0.183
42818-090 SD2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0680	<0.05	<0.05
42818-091 SD2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0972	<0.05	0.190
42818-092 SD2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.184	<0.05	0.490
42818-093 SD2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.377	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.231	<0.05	<0.05
42818-094 SD2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.455
42818-095 SD2-7-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.112	<0.05	0.200
42818-096 SD2-8-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.673	<0.05	<0.05	0.0639	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.259
42818-097 SD2-9-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.137	<0.05	<0.05
42818-098 C + 0.050 PPM	0.0307	0.0324	0.0311	0.0392	0.0365	0.0326	0.0395	0.0429	0.0438	0.0488	0.0430	0.0521	0.0237	0.0160	0.0238	0.000	NA
42818-098 C + 0.005 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000864
% RECOVERY	61.4	64.8	62.2	78.4	73.0	65.2	79.0	85.8	87.6	97.6	86	104	47.4	32.0	47.6	0.0	17.3
42818-099 SD2-10-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.161	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-100 SD1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.133	<0.05	0.0562
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.133
42818-102 SD1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.198	0.422	<0.05	<0.05
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.237	<0.05	<0.05	<0.05	0.0605	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0637	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-106 SD3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0847	<0.05	0.0784	<0.05	<0.05	0.163	<0.05	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0985
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.112
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.247
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.536	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.137
42818-111 C + 0.10 PPM	0.0698	0.0720	0.0666	0.0736	0.0754	0.0691	0.0794	0.0888	0.0955	0.109	0.112	0.131	0.122	0.132	0.149	0.0813	NA
42818-111 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00417
% RECOVERY	69.8	72.0	66.6	59.7	75.4	69.1	79.4	88.8	95.5	109	112	131	122	132	149	81.3	41.7
42818-112 SD3-9-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.647	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0947	<0.05	0.286
42818-113 SD3-10-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.502	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0804	<0.05	0.214
42818-114 SD4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.345	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0586	<0.05	0.421
42818-115 SD4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.454	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0707	<0.05	0.374
42818-116 SD4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.366	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0669	<0.05	<0.05
42818-117 SD4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.426	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.0732
42818-118 SD4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.247	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.108	<0.05	<0.05
42818-119 SD4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.255	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.105	<0.05	0.164
42818-120 SD4-7-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-121 SD4-7d-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.208	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-122 SD4-8-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0668	<0.05	<0.05	0.0790	<0.05	<0.05
42818-123 SD4-9-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0781	<0.05	0.0608	0.0524	<0.05	<0.05	0.0586	<0.05	<0.05
42818-124 SD4-10-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0815

Table II. Summary Table of Results for Water.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-200 C + 20.0 PPB	5.98	3.39	3.50	4.25	3.45	5.33	3.39	2.07	3.79	5.06	5.01	2.86	3.62	2.42	1.85	1.89	NA
42818-200 C + 1.0 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.517
% RECOVERY	29.1	17.0	17.0	19.0	9.75	19.7	17.0	6.45	15.1	21.8	20.3	12.4	13.7	10.2	4.9	8.1	51.6
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	1.10	<1.0	1.92	<1.0	<1.0	<1.0	1.03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	1.92	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	4.05	<1.0	<1.0	<1.0	1.29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	2.57	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	1.54	<1.0	3.31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	2.49	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	<1.0	<1.0	<1.0	1.89	<1.0	6.60	<1.0	1.00	1.13	1.44	<1.0	1.64	<1.0	<1.0	<1.0	<1.0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	1.09	<1.0	2.49	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	1.25	<1.0	2.96	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	1.15	<1.0	3.18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-211 C + 2.00 PPB	1.64	1.63	1.58	1.95	2.77	2.04	4.53	1.68	2.58	2.72	2.60	2.18	2.59	2.19	1.82	1.54	NA
42818-211 C + 0.20 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0898
% RECOVERY	73.5	81.5	72.5	75.0	63.5	32.5	227	75.0	90.0	101	82.0	89.5	85.0	90.0	47.5	63.5	44.2
42818-212 SW2-7-815	<1.0	<1.0	<1.0	<1.0	2.20	<1.0	7.04	<1.0	1.09	1.24	1.44	<1.0	1.88	<1.0	<1.0	<1.0	<1.0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	3.72	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	<1.0	<1.0	<1.0	1.60	<1.0	5.15	<1.0	<1.0	<1.0	1.09	<1.0	1.15	<1.0	<1.0	<1.0	<1.0
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Table II. Summary Table of Results for Water.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	4.08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	2.26	<1.0	9.43	<1.0	1.25	1.23	2.75	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.66	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	1.32	<1.0	3.70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.37	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-222 C + 0.20 PPB	0.32	0.25	0.23	0.66	1.60	0.33	6.21	0.35	1.18	1.02	1.28	0.85	1.21	0	1.01	0.37	NA
42818-222 C + 0.020 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00482
% RECOVERY	75.0	125	50.0	105	50.0	0	700	85.0	200	155	160	230	160	0	0.0	50.0	16.9
42818-223 SW4-3-817	<1.0	<1.0	<1.0	<1.0	2.27	2.03	8.07	<1.0	1.22	1.25	1.63	<1.0	1.55	<1.0	1.17	<1.0	<1.0
42818-224 SW4-4-817	<1.0	<1.0	<1.0	<1.0	1.76	<1.0	6.80	<1.0	<1.0	<1.0	1.45	<1.0	1.13	<1.0	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	<1.0	<1.0	<1.0	<1.0	1.94	2.41	7.60	<1.0	1.12	<1.0	1.33	<1.0	1.21	<1.0	1.14	<1.0	<1.0
42818-227 SW4-7-817	<1.0	<1.0	<1.0	<1.0	1.68	2.27	7.09	<1.0	<1.0	<1.0	1.29	<1.0	1.12	<1.0	1.07	<1.0	<1.0
42818-228 SW4-7d-817	<1.0	<1.0	<1.0	<1.0	1.56	2.27	5.34	<1.0	<1.0	<1.0	1.10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	<1.0	<1.0	<1.0	<1.0	1.59	1.78	5.56	<1.0	<1.0	<1.0	1.18	<1.0	<1.0	<1.0	1.00	<1.0	<1.0
42818-230 SW4-9-817	<1.0	<1.0	<1.0	<1.0	1.35	<1.0	4.42	<1.0	<1.0	<1.0	1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	<1.0	<1.0	<1.0	<1.0	1.45	<1.0	5.66	<1.0	<1.0	<1.0	1.03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-232 Control Water	0.17	0	0.13	0.45	1.50	1.39	4.81	0.18	0.78	0.71	0.96	0.39	0.89	0.39	0.87	0.27	0.00145

Table III. Summary Table of Results for Bats and Guano.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-290 C + 0.10 PPM	0.0995	0.0909	0.0874	0.0946	0.104	0.107	0.106	0.106	0.119	0.130	0.138	0.158	0.180	0.162	0.245	0.0285	NA
42818-290 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00411
% RECOVERY	99.5	90.9	87.4	94.6	104	107	106	106	119	130	138	158	180	162	245	28.5	41.1
42818-291 TM1-1-808	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.236	<0.09	0.290	0.172	0.0988	0.221	0.323	0.169	0.525	<0.09	<0.09
42818-292 TM1-2-809	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0659	<0.04	0.0454	0.0911	0.0430	0.0843	0.0689	0.149	0.284	<0.04	<0.04
42818-293 TM3-1-809	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.105	<0.10	<0.10	0.156	<0.10	0.247	0.238	0.326	0.551	<0.10	<0.10
42818-294 TM3-2-810	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.132	<0.10	<0.10	0.156	<0.10	0.207	0.225	0.184	0.514	<0.10	<0.10
42818-295 TM4-1-809	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0893	<0.05	<0.05	0.0534	<0.05	0.0578	0.0809	<0.05	0.125	<0.05	<0.05
42818-296 TM4-1-810	<0.03	<0.03	0.0361	<0.03	<0.03	<0.03	0.0488	0.0259	0.0573	0.174	0.0564	0.0900	0.190	0.0862	0.448	0.0604	<0.03
42818-297 TM3-6-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.0983	0.152	0.113	0.267	0.480	0.141	0.283	0.732	0.209	0.818	0.0844	<0.08
42818-298 TM4-1-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.134	0.241	<0.08	0.428	0.801	0.196	0.503	1.163	0.336	2.172	0.118	<0.08
42818-299 TM2-1-812	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0864	<0.04	0.0665	0.117	0.0592	0.135	0.121	0.124	0.285	<0.04	<0.04
42818-300 TM2-11-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0653	<0.05	0.105	0.142	0.163	0.318	<0.05	<0.05
42818-301 TM2-2-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.115	<0.10	<0.10	0.131	<0.10	0.189	0.122	0.249	0.489	0.252	<0.10
42818-302 C + 1.00 PPM	0.799	0.698	0.712	0.752	0.887	0.916	0.405	0.961	1.051	1.147	1.051	1.145	1.264	1.194	1.459	0.820	NA
42818-302 C + 0.050 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0127
% RECOVERY	80.0	69.8	71.2	75.2	88.7	91.6	40.5	96.1	105	115	105	115	126	119	146	82.0	25.4
42818-303 TM2-3-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.131	<0.10	0.248	0.471	0.127	0.275	0.764	0.239	1.150	<0.10	<0.10
42818-304 TM2-4-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.169	<0.10	0.241	0.439	0.136	0.334	0.607	0.211	1.368	<0.10	<0.10
42818-305 TM2-5-812	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.0850	<0.07	<0.07	0.0931	0.0742	0.148	0.270	0.135	0.294	<0.07	<0.07
42818-306 TM4-1-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0684	<0.05	0.0798	0.126	0.0549	0.186	0.224	0.232	0.497	0.326	<0.05
42818-307 TM2-1-813	<0.10	<0.10	<0.10	<0.10	<0.10	0.116	0.263	0.162	0.317	0.519	0.159	0.370	0.862	0.225	1.363	<0.10	<0.10
42818-308 TM4-1-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0731	<0.06	0.105	0.0924	0.130	0.284	0.170	<0.06
42818-309 TM4-2-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0773	0.142	<0.06	0.114	0.262	0.0826	0.313	<0.06	<0.06
42818-310 TM4-3-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05	<0.05	0.0509	0.0661	0.116	0.0646	0.152	<0.05	<0.05

Table III. Summary Table of Results for Bats and Guano.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-311 TM4-G2-808	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	15.424	17.517	18.722	35.409	<10.0	<10.0
42818-312 TM2-G-812	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	6.444	12.616	<6.0	<6.0
42818-313 TM2-G-813	<17.0	<17.0	<17.0	<17.0	<17.0	<17.0	18.893	<17.0	17.309	<17.0	<17.0	<17.0	21.983	<17.0	61.308	<17.0	<17.0
42818-314 TM2-6-812	<0.05	<0.05	<0.05	<0.05	<0.05	0.0509	0.112	<0.05	0.122	0.203	0.0707	0.168	0.340	0.116	0.627	<0.05	<0.05

Table IV. Summary Table of Results for Fish.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-276 C + 0.10 PPM	0.0774	0.0930	0.0920	0.118	0.106	0.102	0.191	0.125	0.165	0.130	0.125	0.147	0.154	0.118	0.228	0.0141	NA
42818-276 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00475
% RECOVERY	77.4	93.0	92.0	118	106	102	191	125	165	130	125	147	154	118	228	14.1	47.5
42818-277 TF4-1-814	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.106	0.133	0.0520	0.156	0.180	0.113	0.356	<0.05	<0.05
42818-278 TF2-1a-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.317	<0.05	0.0644	0.129	0.0651	0.126	0.125	0.119	0.259	<0.05	<0.05
42818-279 TF2-1b-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0770	<0.05	0.0580	0.119	0.0568	0.108	0.0554	0.139	0.295	0.142	<0.05
42818-280 TF2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0695	0.340	0.0987	0.261	0.433	0.1215	0.275	0.403	0.190	0.981	<0.05	<0.05
42818-281 TF2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.283	<0.05	0.101	0.169	0.0853	0.283	0.122	0.252	0.450	0.251	<0.05
42818-282 TF2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.234	<0.05	<0.05	0.0885	<0.05	0.0731	0.0619	0.0534	0.199	<0.05	<0.05
42818-283 TF2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0621	0.333	0.0803	0.202	0.344	0.0952	0.233	0.338	0.131	0.761	0.0720	<0.05
42818-284 TF2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.210	<0.05	<0.05	0.0775	<0.05	0.0891	0.0565	0.0736	0.167	<0.05	<0.05
42818-285 TF3-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.172	<0.05	<0.05	0.0539	0.0569	0.0578	<0.05	<0.05	0.119	<0.05	<0.05
42818-286 TF3-2-815	<0.05	<0.05	<0.05	<0.05	0.0635	0.0761	0.348	0.0898	0.193	0.316	0.100	0.181	0.313	0.119	0.669	<0.05	<0.05
42818-287 TF3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	<0.05	<0.05	<0.05	0.0664	0.0612	0.0607	0.141	<0.05	<0.05
42818-288 TF3-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0710	0.361	0.0949	0.196	0.321	0.0737	0.213	0.301	0.132	0.682	0.0513	<0.05
42818-289 TF3-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.229	<0.05	<0.05	<0.05	<0.05	0.0559	0.0659	<0.05	0.185	<0.05	<0.05

Table V. Summary Table of Results for Insects.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
42818-250 C + 0.10 PPM	0.0700	0.0527	0.0511	0.0588	0.0685	0.0974	0.0532	0.0933	0.0823	0.115	0.118	0.140	0.138	0.151	0.170	0.0927	NA
42818-250 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00179
% RECOVERY	70.0	52.7	51.1	58.8	68.5	97.4	53.2	93.3	82.3	115	118	140	138	151	170	92.7	17.9
42818-251 TI1-808	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.318	<0.50	<0.50
42818-252 TI4-808	<0.10	<0.10	<0.10	<0.10	<0.10	0.107	<0.10	<0.10	<0.10	0.102	<0.10	<0.10	0.116	<0.10	0.307	<0.10	<0.10
42818-253 TI1-809	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.0429	<0.03	<0.03	<0.03	0.0393	0.0868	<0.03	<0.03
42818-254 TI4-809	<0.10	<0.10	<0.10	<0.10	<0.10	0.103	<0.10	<0.10	<0.10	0.102	0.115	<0.10	<0.10	<0.10	0.292	<0.10	<0.10
42818-255 TI3-810	<0.04	<0.04	0.040	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0679	<0.04	<0.04	0.110	<0.04	<0.04
42818-256 TI4-810	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0813	0.0417	<0.04
42818-257 TI3-811	<0.06	0.0659	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0601	<0.06	<0.06	<0.06	0.150	<0.06	<0.06
42818-258 TI4-811	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0636	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.164	<0.06	<0.06
42818-259 TI2-812	<0.05	<0.05	0.0557	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.115	<0.05	<0.05
42818-260 TI2-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0566	<0.05	<0.05	0.0648	0.0695	0.0510	<0.05	0.0908	0.128	<0.05	<0.05
42818-261 TI4-812	<0.05	<0.05	0.0632	<0.05	<0.05	<0.05	0.0536	<0.05	<0.05	0.0753	0.0767	0.0798	<0.05	<0.05	0.0893	<0.05	<0.05
42818-262 TI4-813	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.160	<0.07	<0.07

Table VI. Summary Table of Results for Bark and Leaves.

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocthane
42818-263 C + 0.10 PPM	0.104	0.131	0.591	0.116	0.161	0.180	0.211	0.187	0.334	0.473	0.209	0.460	0.682	0.320	0.753	0.160	NA
42818-263 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00525
% RECOVERY	104	131	591	116	161	180	211	187	334	473	209	460	682	320	753	160	52.5
42818-264 SV1-2-816	0.898	<0.05	0.250	<0.05	0.0645	0.0786	0.101	0.0647	0.122	0.120	0.114	0.299	0.289	0.243	0.358	0.516	<0.05
42818-265 SV1-3-816	0.253	<0.05	0.800	0.268	1.137	0.240	0.0920	<0.05	0.111	0.159	0.0949	0.245	0.244	0.160	2.779	0.190	<0.05
42818-266 SV1-1-816	0.0673	0.234	0.675	2.856	1.548	0.870	0.492	0.347	0.158	0.314	0.160	0.309	0.327	0.278	0.377	0.369	<0.05
42818-267 TV2-1-815	<0.05	0.0654	8.408	<0.05	0.0833	0.169	0.0985	0.0983	0.109	0.142	<0.05	0.207	0.154	0.189	0.359	0.149	<0.05
42818-268 TV2-2-815	0.0833	0.0817	0.326	<0.05	0.292	0.304	0.280	0.212	0.579	0.910	0.243	2.174	<0.05	0.300	4.493	0.122	<0.05
42818-269 TV2-3-815	<0.04	<0.04	0.0655	<0.04	<0.04	<0.04	0.148	0.0530	0.0915	0.101	0.0434	0.138	0.171	0.0984	0.175	0.0833	<0.04
42818-270 TV3-1-815	<0.05	<0.05	0.206	<0.05	<0.05	0.0643	0.117	<0.05	0.0900	<0.05	0.0662	0.186	0.233	0.141	0.233	0.103	<0.05
42818-271 TV3-2-815	<0.05	<0.05	0.0919	0.0614	0.0667	0.0526	0.179	0.153	0.309	0.513	0.157	0.383	0.696	0.176	0.888	0.173	<0.05
42818-272 TV3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	0.0870	0.101	0.0607	0.168	0.226	0.123	0.202	0.0530	<0.05
42818-273 SV4-1-817	0.133	<0.05	0.149	<0.05	<0.05	0.0735	0.183	0.0734	0.102	0.0666	<0.05	0.149	0.144	0.111	0.224	0.0739	<0.05
42818-274 SV4-2-817	<0.05	<0.05	0.0526	<0.05	<0.05	0.0683	0.0706	<0.05	0.0963	0.130	<0.05	0.173	0.177	0.173	0.306	0.139	<0.05
42818-275 SV4-3-817	<0.05	<0.05	0.0525	0.0656	<0.05	0.0671	0.183	0.0862	0.150	0.226	0.128	0.278	0.401	0.186	0.356	0.114	<0.05

Table VII. Summary Table of Results for GC/MSD Confirmation.

Sample Name	Det	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorobenzene
42818-078 SM4-5-817-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0827	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0894	< 0.05	< 0.05
42818-078 SM4-5-817-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-078 SM4-5-817-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0756	0.053	< 0.05	< 0.05	< 0.05	< 0.05
42818-078 SM4-5-817-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-096 SD2-8-815-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0835	< 0.05	< 0.05
42818-096 SD2-8-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-207 SW2-3-815	FID	< 1.0	< 1.0	< 1.0	< 1.0	1.89	< 1.0	6.60	< 1.0	1.00	1.13	1.44	< 1.0	1.64	< 1.0	< 1.0	< 1.0	< 1.0
42818-207 SW2-3-815	MSD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.32	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
42818-223 SW4-3-817	FID	< 1.0	< 1.0	< 1.0	< 1.0	2.27	2.03	8.07	< 1.0	1.22	1.25	1.63	< 1.0	1.55	< 1.0	1.17	< 1.0	< 1.0
42818-223 SW4-3-817	MSD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
42818-260 TI2-813-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-260 TI2-813-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-260 TI2-813-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.051	< 0.05	0.058	0.0853	< 0.05	< 0.05
42818-260 TI2-813-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TI4-812-PNA	FID	< 0.05	< 0.05	0.0518	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0264	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TI4-812-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TI4-812-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0535	0.052	0.0534	< 0.05	< 0.05	0.0893	< 0.05	< 0.05
42818-261 TI4-812-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-266 SV1-1-816-PNA	FID	0.0673	< 0.05	0.675	< 0.05	0.355	0.687	0.436	0.288	0.0995	0.212	0.0865	0.195	0.117	0.147	0.181	0.0831	< 0.05
42818-266 SV1-1-816-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-266 SV1-1-816-FL	FID	< 0.05	0.21	< 0.05	2.86	1.19	0.183	0.0553	0.0588	0.0583	0.102	0.0736	0.115	0.21	0.131	0.196	0.286	0.214
42818-266 SV1-1-816-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

ABC LABS #42818R-22a

Water, ppb - all other, ppm

Table VII. Summary Table of Results for GC/MSD Confirmation.

Sample Name	Det	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclohexane
42818-268 TV2-2-815-PNA	FID	< 0.05	< 0.05	0.3257	< 0.05	0.0753	0.236	0.0759	0.095	0.384	0.581	0.107	0.222	< 0.05	0.149	3.37	< 0.05	0.0967
42818-268 TV2-2-815-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-268 TV2-2-815-FL	FID	< 0.05	0.0614	< 0.05	< 0.05	0.217	0.0674	0.204	0.117	0.194	0.329	0.136	1.952	< 0.05	0.151	1.12	0.122	0.294
42818-268 TV2-2-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-280 TF2-2-815-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0506	0.173	0.297	< 0.05	0.0998	< 0.05	0.0801	0.596	< 0.05	< 0.05
42818-280 TF2-2-815-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-280 TF2-2-815-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.292	< 0.05	0.0875	0.136	0.0845	0.175	0.367	0.11	0.386	< 0.05	< 0.05
42818-280 TF2-2-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	3.66	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-291 TM1-1-808-PNA	FID	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.0918	< 0.09	0.236	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.189	< 0.09	< 0.09
42818-291 TM1-1-808-PNA	MSD	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
42818-291 TM1-1-808-FL	FID	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.144	< 0.09	< 0.09	0.0949	< 0.09	0.164	0.323	0.124	0.337	< 0.09	< 0.09
42818-291 TM1-1-808-FL	MSD	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
42818-298 TM4-1-811-PNA	FID	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.184	0.402	< 0.08	0.111	< 0.08	0.122	1.37	< 0.08	< 0.08
42818-298 TM4-1-811-PNA	MSD	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
42818-298 TM4-1-811-FL	FID	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.184	< 0.08	0.244	0.399	0.134	0.392	1.09	0.214	0.8	0.118	< 0.08
42818-298 TM4-1-811-FL	MSD	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
42818-313 TM2-G-813-PNA	FID	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	23.9	< 17	< 17
42818-313 TM2-G-813-PNA	MSD	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17
42818-313 TM2-G-813-FL	FID	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	22	< 17	37.4	< 17	< 17
42818-313 TM2-G-813-FL	MSD	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17

ABC LABS #42818-22b

Water, ppb - all other, ppm

Raw Data Appendices

ABC Study #42818R

Some of the records that appear in this raw data appendix have been provided as photocopies of original records on file at ABC. This has been done by necessity for certain data that are used commonly in several studies at ABC. Such records include compound receipt records, preparation of stock standards, and dilutions.

The following data correction symbols may appear in the raw data section of this report:

C Calculation error	R Recording error
E Entry error	F Form change
S Spelling error	T Transcription error
D Dating error	I Insertion

Observations and/or Remarks Form

Test Material: Fog Oil

Sample Type: Varies

ABC Study No.: 42818

Principal Investigator: Kelly V. Davis

Lab Form No. 72

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

Comments

The folowing compounds were weighed to four decimal places on an analytical balance, MAT ID# 1714-145A. Each compound was weighed into a separate volumetric flask. A correction for purity was made. The amount weighed, the purity, the final volume, and the solvent used are listed after each compound. The nominal concentration for each standard solution is 1.0 mg/ml.

2-Methylquinoline	(0.1003g, 100%, 100 mL, Iso-Octane)
6-Methylquinoline	(0.1023g, 98%, 100 mL, Iso-Octane)
Biphenyl	(0.1003g, 100%, 100 mL, Diethyl Ether)
2,6-Dimethylnapthalene	(0.1011g, 99%, 100 mL, Iso-Octane)
1,3-Dimethylnapthalene	(0.1043g, 96%, 100 mL, Iso-Octane)
1,2-Dimethylnapthalene	(0.1056g, 95%, 100 mL, Iso-Octane)
2,3,5-Trimethylnapthalene	(0.0511g, 98%, 50.0 mL, Iso-Octane)
Hexadecane	(0.1003g, 100%, 100 mL, Diethyl Ether)
Fluorene	(0.1020g, 98%, 100 mL, Iso-Octane)
4,4'-Dimethylphene	(0.1033g, 97%, 100 mL, Iso-Octane)
1-Methylfluorene	(0.1011g, 99%, 100 mL, Iso-Octane)
Phenanthrene	(0.1002g, 100%, 100 mL, Iso-Octane)
Anthracene	(0.1003g, 100%, 100 mL, Acetone)
2-Methylphenanthrene	(0.1056g, 95%, 100 mL, Iso-Octane)
9-Methylanthracene	(0.1021g, 98%, 100 mL, Iso-Octane)
3,6-Dimethylphenanthrene	(0.0515g, 97%, 50.0 mL, Iso-Octane)
2-Ethylanthracene	(0.1020g, 98%, 100 mL, Iso-Octane)
9,10-Dimethylanthracene	(0.1010g, 99%, 100 mL, Iso-Octane)

Prepared By: Joann Grant Date: 30 Jan 96

Checked By: Kelly V Davis Date: 30 Jan 96

Observations and/or Remarks Form

Test Material: Fog Oil

Sample Type: Varies

ABC Study No.: 42818

Principal Investigator: Kelly V. Davis

Lab Form No. 72

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

Comments

The 50.0 µg/ml standard (std. mix A) was prepared by taking a 5.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The 10.0 µg/ml standard (std. mix B) was prepared by taking a 1.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The dilution solvent in each flask was Iso-Octane. These standards were stored in a refrigerator.

2-Methyquinoline
6-Methylquinoline
Biphenyl
2,6-Dimethylnapthalene
1,3-Dimethylnapthalene
1,2-Dimethylnapthalene
2,3,5-Trimethylnapthalene
Hexadecane
Fluorene
4,4'-Dimethylbiphenyl
1-Methylfluorene
Phenanthrene
Anthracene
2-Methylphenanthrene
9-Methylanthracene
3,6-Dimethylphenanthrene
2-Ethylanthracene
9,10-Dimethylanthracene

Prepared By: Joann Grant Date: 30 Jan 96

Checked By: Kelly V Davis Date: 30 Jan 96

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s): Varies Primary Std. #(s): NA

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	C	A	50.0 ug/ml	10.0	100	Iso-octane	5.00 ug/ml
2.	D	A		2.00			1.00 ug/ml
3.	E	A		1.00			0.50 ug/ml
4.	F	B	10.0 ug/ml	1.00			0.10 ug/ml
5.	G	A	50.0 ug/ml	20.0		Acetone	10.0 ug/ml ②
6.	H	A		2.00			1.00 ug/ml ②
7.	I	B	10.0 ug/ml	1.00			0.10 ug/ml ②
8.							
9.							
10.							
11.	② This dilution was added on 31 Aug 95; the expiration date is still 28 Aug 96. JCG 31 Aug 95						
12.							

Comments: ①E JCG 30 Aug 95

Dilutions by: Joann Grant Date: ① 30 Aug 95

Checked by: Kelly Y. Davis Date: 30 Jan 96

Approved by: Kelly Y. Davis Date: 30 Jan 96

Dilution Solvent: Iso-octane, Acetone

Lot Number: BI524, BK896

Storage Condition/and Location: Refrigerate MSTID: 1625-1635

Expiration: 8/28/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

ABC 428188 PG 00027

ABC Laboratories, Inc.

PREPARATION OF CONCENTRATED STOCK STANDARDS

No.: 16198 Compound: Hexachloroethane

Primary Standard No.: N/A Lot No.: 06203HF Purity: 99% ②

Final Gross Wt.: 65.2917 g Dilution Volume: 100 ml

Tare Wt.: 65.1⑤700 g Dilution Solvent: i-octane

Net Wt.: 0.1217 g Concentration: 1.20 mg/ml

Adj. Net Wt.: 180 mg

Balance Check Material I.D. No.: 1714-145A

Class S. Weight Added	Before Standard Weighing	After Standard Weighing
100 g	100.0015 g	100.0014 g
100 g + 0.1 g	100.1016 g	100.1014 g
2 g	2.0000 g	1.9999 g
0.1 g	0.1001 g	0.0999 g

Solution Information

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
JAN 30 1996
BY Joann Grant

Expiration Date: 8-21-96

Storage Instructions: 0-6°C

Storage Unit Material Control Number:

Comments: ①⑦ KM 8-21-95 ③ Three significant figures are used in calculations even though only 2 are given for purity. KM 8-21-95
③⑦ 1-30-96

Prepared by: Kelly N. Davis Date: 8-21-③95

Checked by: Joann Grant Date: 30 Jan 96

Lab Form No.: 164a (04/07/94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s): Hexachloroethane — Primary Std. #(s): N/A

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	16198 "A"	16198	1,200 µg/mL	83.0	100	i-octane	1000 µg/mL
2.	"B"	"A"	1000	1.00	↓	↓	10.0 µg/mL
3.	"C"	"B"	10.0	1.00			0.100 µg/mL
4.	"D"	↓	↓	0.500			0.0500 µg/mL
5.	"E"	"C"	0.100	10.0	↓	↓	0.0100 µg/mL
6.							
7.							
8.							
9.							
10.							
11.							
12.							

Comments:

Dilution Solvent: i-octane — Lot Number: BI524

Dilutions by: Kelly V. Davis — Date: 21 Aug 95

Checked by: Joann Grant — Date: 30 Jan 96

Approved by: Kelly V. Davis — Date: 30 Jan 96

Storage Condition/and Location: 0-6°C

Expiration: 8/21/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s): Hexachloroethane — Primary Std. #(s): NA

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	116198 "F"	"B"	10.0 ug/ml	5.00	100	Acetone	0.500 ug/ml
2.	"G"			1.00			0.100 ug/ml
3.	"H"			0.100			0.010 ug/ml
4.							
5.	116198 "I"	"C"	0.100 ug/ml	5.00	100	Isooctane	0.005 ug/ml
6.	"J"	"B"	10.0 ug/ml	0.200 (A) ~~0.100~~			0.020 ug/ml
7.	"K"	"I" "E"	0.005 ug/ml	10.0			0.0005 ug/ml (D)
8.	"L"	"K" (A)	0.010 ug/ml	10.0			0.001 ug/ml (D)
9.							
10.							
11.							
12.	(A) (E) JG 28 Sep 95						

Comments: (D) This dilution was added on 28Sep95, the expiration date is still 21 Aug 96. JG 28 Sep 95

Dilutions by: Joann Grant — Date: 13Sep95

Checked by: Kelly V. Davis — Date: 30 Jan 96

Approved by: Kelly V. Davis — Date: 30 Jan 96

Dilution Solvent	Lot Number
Isooctane	BI524
Acetone	BK896

Storage Condition/and Location: Refrigerate MAT ID: 1625-635

Expiration: 8/21/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

ABC 420186 Pg 00030

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

42818

A Division of abc Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION		REPORT INFORMATION	
Customer Name:	Madej - 3D/Environmental	Report Attention:	
Address:	781 Neeb Road	Project, P.O. #:	
City, State, Zip:	Cincinnati, OH 45069	Project Name:	
Phone:	513 922 8199	Project Manager:	
Fax #:	513 922 9150	Copy To:	

ABC/Pan-Ag Labs Job #:

Date Entered on LIMS:

LAB USE ONLY

REQUESTED ANALYSES: TPH-GAS/BTEX; TPH-DIESEL; Complete Analyses for fog oil

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type (S-Soil, L-Liquid, O-Other)	No. of Containers
	8/8/95	2100	bat + insects + feces		O	7

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments:
samples recieved frozen on dry ice - stored 8-15-C 8-10-95 10:05 - TTB 8-10-95

ARE SAMPLES: NA
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH Ice
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Robert F Madej	8/9/95	11:00 am	Robert F. Madej	3D/Environmental
Received By:	Timothy T. Burks	8-10-95	10:00 am	Timothy T. Burks	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 30 Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: Pan Ag Date/Time of Storage: 10:00 8-10-95

Method of Transportation: Fed Ex Date Shipped: 8-9-95 Date Received: 8-10-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI-W-1 (TI1-W)	insects	8-8-95	-	samples rec'd frozen
TI-B-1 (TI1-B)	insects	8-8-95	-	on dry ice - stored
TI4-B-~~4~~1	insects	8-8-95	-	B-15-C - TTB 8-10-95
TI4-W	insects	8-8-95	-	
~~BF~~ TM4-G site 4-2	bat feces	8-8-95	-	
4-3 mid net	insects	8-8-95	-	
TM1-1	bat	8-8-95	-	
W- white	light			
B				

THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT
AUG 21 1995
BY MLP

Prepared by: Timothy L. Burks Date: 8-10-95

Checked by: Deborah Kerr Date: 8-21-95

Approved by: Martha Pezold Date: 8-21-95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:

Date Entered on LIMS:

Customer Name: Madej 3D/Environmental
Address: 781 Neeb Rd
City, State, Zip: Cincinnati, OH 45233
Phone: 513 922 8199
Fax #: 513 922 9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07 7322 19
Project Name: Fog Oil Ft. McClellan
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete Analyses for Fog oil
	8/9/95	2400	bats, insects		O	8			

LAB USE ONLY

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
____ Rush 5 Day
____ Rush 3 Day
____ Rush 2 Day
____ Rush 1 Day

Comments:
Samples rec'd frozen on dry ice - stored B-11-Aisle upon rec't. Moved To B-15-C 8-15-95 TTB 8-15-95

ARE SAMPLES: ☐ TOXIC? NA ☐ FLAMMABLE? ☐ EXPLOSIVE? ☐ HIGH LEVELS?

PRESERVATIVE: ✓ ~~NONE~~ Ice; ☐ H2SO4; ☐ HNO3; ☐ HCl; ☐ ASCORBIC ACID

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Robert F. Madej	8/10/95	1100 @ pm	Robert F. Madej	3D/Environmental
Received By:	Timothy T. Burks	8-11-95	10:00 @ pm	Timothy T. Burks	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS AND STATUS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 428188 PG 00034

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: fogoil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-E

Received From: 3D Environmental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: fed Ex Date Shipped: 8-10-95 Date Received: 8-11-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI-1-2 (wet)	insects	8-9-95	–	Samples recd cold
TI2-W-2		8-9-95	–	frozen on dry ice
TI1 - B-2		8-9-95	–	stored on B-1-Aisle
TI4- 1 wet 8/10/95		8-9-95	–	upon rec't
TI4 - BX 2		8-9-95	–	
TI4 - WX 2	↓	8-9-95	–	
TM1 -2	Bat	8-9-95	–	
TM 4 - 1	bat	8-10-95	–	
				© E TTB 8-15-95

"THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT"

8-21-95

Prepared by: Timothy A. Burks Date: 8-15-95

Checked by: Deborah Kerr Date: 8-21-95

Approved by: Martha Pezold Date: 8-21-95

Form #ACFS-22 (07/20/95)

ABC 42818R PG 00035

5

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

42818

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: Bob Madej 3D|E
Address: 781 Neeb Rd
City, State, Zip: Cincinnati, OH 45233
Phone: 513 922 8199
Fax #: 513 922 9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fogail Ft. McClellan
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete analyses for log 01
	8/10/95	2300	bats, insects						

LAB USE ONLY

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
_____ Rush 5 Day
_____ Rush 3 Day
_____ Rush 2 Day
_____ Rush 1 Day

Comments:
Samples stored in Walk-in ref. 166-12 on recv'd. Samples moved to freezer B aisle 8-14-95
TTB 8-15-95

ARE SAMPLES:
☐ TOXIC? NA
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ ~~NaOH~~ Ice
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS:
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Robert F Madej	8/11/95	1 am (pm)	Robert F Madej	3D/Environmental
Received By:	Timothy L. Burks	8-15-95	3:30 am (pm)	Timothy T. Burks	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENT REQUEST AND STATUS THANK YOU YOUR TIN ATR GE.

ABC 42818R PG 00036

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: fogail

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: ~~Amy~~ ① Ag 3D Environmental Date/Time of Storage: 10:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-11-95 Date Received: ② 8-12-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI3 - 1 (wet)	insects	8-10-95	-	samples stored
TI3-W-1	insects	8-10-95	-	in Walk-in ref. 166-12
TI4 -W 810	insects	8-10-95	-	upon recd - moved
TI4 - 810 net2	insects	8-10-95	-	to B-11-Aisle 8-14-95
TI4 - 810 net3	insects	8-10-95	-	
TI3 - B - 1	insects	8-10-95	-	
TI4 - B 810	insects	8-11-95	-	
T-M3-1	bat	8-9-95	-	
TM3 - 2	bat	8-10-95	-	
TM4 - 810-1	bat	8-10-95	-	
				③ samples recd 8-12-95 in Aquatics - moved to sample prep 8-14-95 - TTB 8-15-95
				④ E TTB 8-15-95

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"

AUG 21 1995

BY MAP

Prepared by: Timothy A. Burks Date: 8-15-95

Checked by: Deborah Kerr Date: 8-21-95

Approved by: Martha Bezold Date: 8-21-95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati OH 45233
Phone: (513) 922-8199
Fax #: (513) 922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07932219
Project Name: Fog Oil, Ft. McClellan
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

TPH-GAS/BTEX | TPH-DIESEL | Complete analysis for fog oil

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	12/8		bats, insects		O	17
	13/8		bats, insects			13
	11/8		bats, insects			8

LAB USE ONLY

Turnaround Time:
X Standard Turnaround *(10 Working Days)*
(TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments:
Samples recd cold on wet ice - some water in sample jarres - stored B-15-C - 8-15-95 TTB 8-15-95
ETTB 8-15-95

ARE SAMPLES: NA
☐ TOXIC? ☐ FLAMMABLE? ☐ EXPLOSIVE? ☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH ☐ H2SO4 ☐ HNO3 ☐ HCl ☐ ASCORBIC ACID
X Ice

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	14 August 95	0200 am pm	Amy Goebel	3D/Environmental
Received By:	Timothy A. Burks	8-15-95	10:00 am pm	Timothy T. Burks	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

[redacted] PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS AND CLARIFICATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE. [redacted]

ABC 42815R PG 000036

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: 3D Environmental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI2-1 (wet)	insects	8-12-95	—	samples rec'd cold
TI2-B-1	insects	8-12-95	—	on wet ice - some
TI2-W-1		8-12-95	—	water in sample
TI2-W-2		8-13-95	—	jars
TI3-2		8-11-95	—	
TI3-B-2		8-11-95	—	
TI3-W-2		8-11-95		
TI2-B-2		8-13-95	—	
TI4-B 812	insects	8-13-95	—	
TI4-B 813		8-13-95	—	
TI4-W 812		8-13-95	—	
TI4-W 813		8-14-95	—	MAP
TI4-Net4-811		8-11-95	—	
TI4-Net5-811		8-11-95	—	
TI5-Net-812		8-13-95	—	
				TTB 8-15-95

Prepared by: Timothy A. Burks Date: 8-15-95

Checked by: [signature] Date: 8-21-95

Approved by: Martha Gerald Date: 8-21-95

Form #ACFS-22 (07/20/95)

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: 3D Environmental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TM2-1	bat	8-12-95	-	samples rec'd cold
TM2-1	bat	8-13-95	-	on wet ice - some
TM2-2	bat	8-12-95	-	water in sample
TM2-3	bat	8-12-95	-	jars
TM2-4	bat	8-12-95	-	
TM2-11	bat	8-12-95	-	
TM2-G-3	bat feces	8-13-95	-	
TM2-G-4	bat feces	8-13-95	-	
TM2-G-7	bat feces	8-12-95	-	
TM2-G-8	bat feces	8-12-95	-	
TM2-G-9	bat feces	8-12-95	-	
TM2-G-14	bat feces	8-12-95	-	
TM2-G-15	bat feces	8-12-95	-	
TM3-6	bat	8-11-95	-	
TM4-1-812	bat	8-12-95	-	
TM4-1-813	bat	8-13-95		

"THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT" AUG 21 1995 BY

Prepared by: Timothy L. Burks Date: 8-15-95

Checked by: Deborah Kerr Date: 8-21-95

Approved by: Martha Tyrrell Date: 8-21-95

Form #ACFS-22 (07/20/95)

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 30 Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: 30 Environmental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TM4-2-813	bat	8-13-95	—	Samples recd cold
TM4-3-813	bat	8-14-95	—	on wet ice - some
TM2-5	bat	8-12-95	—	water in sample jars
TM4-1-811	bat	8-11-95	—	
site 4 Black light	insects	8-11-95	—	TI4-B-811
site 4 white light	insects	8-11-95	—	TI4-W-811

Prepared by: Timothy A. Burks Date: 8-15-95

Checked by: Deborah Kerr Date: 8-21-95

Approved by: Martha Pezold Date: 8-21-95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati, OH 45233
Phone: (513) 922-8199
Fax #: 513/922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 077322
Project Name: Fuel Oil/IT McClellan
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete analysis for fuel oil
	15/8/95		Surface water	Site 2	L	11			✓

LAB USE ONLY

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
_____ Rush 5 Day
_____ Rush 3 Day
_____ Rush 2 Day
_____ Rush 1 Day

Comments:
SW2-10 Broken
All Samples Cold on wet ice. Stored Refrigerator D 17 Aug 95 NH

ARE SAMPLES:
☐ TOXIC? NA
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS: X ICP
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	16 August 95	am pm	Amy Goebel	3D/Environmental
Received By:	Marsha Pegard	17 Aug. 95	10:00 am pm	Marsha Pegard	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 42818R PG 00042

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: D

Received From: 3D/Environmental Date/Time of Storage: ~~18~~ 17 Aug 95 12:30 pm

Method of Transportation: Fed Ex Date Shipped: 16 Aug 95 Date Received: 17 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SW2-1	Water	15 Aug 95	N/A	Cold on unting
SW2-dup-1	water	15 Aug 95		
SW2-2	Water	15 Aug 95		
SW2-3	Water	15 Aug 95		
SW2-4	Water	15 Aug 95		
SW2-5	Water	15 Aug 95		
SW2-6	Water	15 Aug 95		
SW2-7	Water	15 Aug 95		
SW2-8	Water	15 Aug 95		
SW2-9	Water	15 Aug 95		
SW2-10	Water	15 Aug 95		Broken
				Stored
	(E) MAP	18 Aug 95	(2) (D) MAP	8-21-95

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"

AUG 21 1995

MAP

Prepared by: Martha Pezold Date: 18 Aug 95

Checked by: Lorrie Ballenger Date: 21 Aug 95

Approved by: Martha Pezold Date: 21 Aug 95

Form #ACFS-22 (07/20/95)

ABC 42818R PG 00043

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of abc Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati OH 45233
Phone: 513) 922-8199
Fax #: 513) 922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 077322
Project Name: Fig oil / 17 McCollum
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:

Lab Sample I.D.#	Date Sampled	Time Sampled	Client Sample Description	Location/Depth	Sample Type (S-Soil, L-Liquid, O-Other)	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Contact for analysis	
	8/14/95	1730	fish	SIIC 4	tissue	1			✓	
	8/15/95	1330	fish	SIIC 2	tissue	6			✓	
	8/11/95	1712	Fish	SIIC 3	tissue	5			✓	

LAB USE ONLY

Sampler:

Turnaround Time:
X Standard Turnaround *(10 Working Days)*
(TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments:
weight of SIIC 4 fish: 25.2g
weight of SIIC 2 fish: 349.4g
weight of SIIC 3 fish: 1003.3g

Also rec'd fish labeled only: TF2-1 15 Aug 95. Therefore rec'd total of 13 fish

ARE SAMPLES N/A
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

X dry ice

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	16 August	630 am pm	Amy Goebel	3D/Environmental
Received By:	Martha Pozzell	17 Aug 95	10:00 am pm	Martha Pozzell	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

[redacted]

ABC 42818R PG 00044

14

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Enviornmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 3D/Enviornmental Date/Time of Storage: ① 18Aug95 4:35PM

Method of Transportation: Fed Ex Date Shipped: 16Aug95 Date Received: 17Aug95

Sample ID	① Matrix	Date Sampled	Weight	Comments
TF 3-2	#1712 fish	15Aug95	N/A	Rec'd Ambient
TF 3-3	1712 fish	15Aug95	N/A	No Ice.
TF 3-4	1712 fish	15Aug95		Stored B-aisle
TF 3-5	1712 fish	15Aug95		upon receipt.
TF 3-1	1712 fish	15Aug95		
TF 2-1	1330 fish	15Aug95		
TF 2-2	1330 fish	15Aug95		
TF 2-3	1330 fish	15Aug95		
TF 2-4	1330 fish	15Aug95		
TF 2-5	1330 fish	15Aug95		"DOCUMENT"
TF 2-6	1330 fish	15Aug95		AUG 21 1995
TF 4-1	fish 1730	14Aug95		
TF 2-1	fish	15Aug95	↓	MAP

①Ⓔ MAP 18Aug95

Prepared by: Martha Pezold Date: 18Aug95

Checked by: Deborah Kerr Date: 21Aug95

Approved by: Martha Pezold Date: 21Aug95

Form #ACFS-22 (07/20/95)

ABC 42818R PG 00045

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of abc Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

LAB USE ONLY	CUSTOMER INFORMATION	REPORT INFORMATION
ABC/Pan-Ag Labs Job #:	Customer Name: 3D/ENVIRONMENTAL	Report Attention: Angela Schmidt
	Address: 781 Neeb Road	Project, P.O. #: 077322
Date Entered on LIMS:	City, State, Zip: Cincinnati, OH 45233	Project Name: Fig Oil / 1 McClellan
	Phone: (513) 922-8199	Project Manager:
	Fax #: (513) 922-9150	Copy To: Angela Schmidt

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type (S-Soil, L-Liquid, O-Other)	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Composite samples	by loc
	15/8/95		vegetation/bark	SIC 2+3		6			1	
	1/8/95		sediment	SIC 2		11			7	

REQUESTED ANALYSES

Turnaround Time:
X Standard Turnaround (10 Working Days) (TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments: Rec'd on wet ice

ARE SAMPLES: NA
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☒ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	11/8/95	6:30 am pm	Amy Goebel	3D/Environmental
Received By:	Martha Pezold	18 Aug 95	10:30 (am) pm	Martha Pezold	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 42818R PG 00046

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D\Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davies Storage Location: ~~B-aisle~~ Leaves B-13-I Sediment refrig. DC

Received From: 3D\ Environmental Date/Time of Storage: 8-18-95 4:00 pm

Method of Transportation: Fed Ex Date Shipped: 16 Aug 95 Date Received: 17 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
TV2-1	Bark & leaves Carpet	15 Aug 95	N/A	Pic'd on wet ice
TV2-2	Bark & leaves Leaves Tedlar	15 Aug 95		Stored B-aisle
TV2-3	Bark & leaves	15 Aug 95		upon receipt
TV3-1	Bark & Leaves	15 Aug 95		
TV3-2	Bark & Leaves	15 Aug 95		
TV3-3	Bark & Leaves	15 Aug 95		
SD2-1	Sediment	15 Aug 95		
SD2-Dup-1	Sediment	15 Aug 95		
SD2-2	Sediment	15 Aug 95		21 1535
SD2-3	Sediment	15 Aug 95		
SD2-4	Sediment	15 Aug 95		NLP
SD2-5	Sediment	15 Aug 95		
SD2-6	Sediment	15 Aug 95		
SD2-7	Sediment	15 Aug 95		
SD2-8	Sediment	15 Aug 95		
SD2-9				
SD2-10	Sediment	15 Aug 95	V	

Prepared by: Martha Fitzgerald NLP 8-18-95 Date: 18 Aug 95

Checked by: Deborah Kern Date: 21 Aug 95

Approved by: Martha Fitzgerald Date: 21 Aug 95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Rd
City, State, Zip: Cincinnati, OH 45233
Phone: (513) 922-5199
Fax #: (513) 922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fry Oil
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete analysis for frg oil
	16 Aug 95		Soil		S	19			
	16 Aug 95		Water		L	3			
	16 Aug 95		sediment		S	1			

LAB USE ONLY

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
_____ Rush 5 Day
_____ Rush 3 Day
_____ Rush 2 Day
_____ Rush 1 Day

Comments:
Rec'd 4 Sediment, 16 Soil, 3 water
all Cool in water. NO ice remaining

ARE SAMPLES: NA
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS:
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Gerbel	18/8/95	0700 am pm	Amy Gerbel	3D/E
Received By:	Martha Peygold	18 Aug 95	10:30 am pm	Martha Peygold	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 428188 P6 000946

18

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: D

Received From: 3D/Environmental Date/Time of Storage: 18 Aug 95 12:30 pm

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SU1-2	Soil	8/16/95	N/A	Cool in water.
SU1-Dup-2	Soil	8/16/95		No ice
SU3-2	Soil	8/16/95		remaining
SU3-3	Soil	8/16/95		
SU3-6	Soil	8/16/95		
SB1-2	Soil	8/16/95		
SB2-2	Soil	8/16/95		
SB3-5	Soil	8/16/95		
SU1-3	Soil	8/16/95		
SM1-2	Soil	8/16/95		
SM1-4	Soil	8/16/95		21 1995
SM1-5	Soil	8/16/95		MAP
SM2-2	Soil	8/16/95		
SM3-Dup-1	Soil	8/16/95		
SM3-5	Soil	8/16/95		
SM3-6	Soil	8/16/95		

*Date taken from Fed Ex label

Prepared by: Martha Tezeld Date: 18 Aug 95

Checked by: Deborah Mix Date: 21 Aug 95

Approved by: Martha Tezeld Date: 21 Aug 95

Form #ACFS-22 (07/20/95)

ABC 42818R PG 00049

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D\Environmental

Analysis: Fuel Oil

Principal Analytical Investigator: Kelly Davies Storage Location: D

Received From: 3D\Environmental Date/Time of Storage: 18Aug95 12:30 PM

Method of Transportation: Fed Ex Date Shipped: 17Aug95① Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SD1-1	Sediment	16/8/95	N/A	Cool in water
SD1-2	Sediment	16/8/95		No ice remaining
SD1-3	Sediment	16/8/95		
SD3-6	Sediment	16/8/95		
SW1-1	water	16/8/95		
SW1-2	Water	16/8/95		
SW1-3	Water	16/8/95	↓	
				21 1995
				MAP
① Date Taken from Fed Ex label				MAP 8-18-95

Prepared by: Martha Pezoldt Date: 18 Aug 95

Checked by: Deborah Ker Date: 21Aug95

Approved by: Martha Pezoldt Date: 21Aug 95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati OH 45233
Phone: (513)922-8199
Fax #: (513)922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 6770219
Project Name: Fog Oil
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	complete analysis for fog oil
	16Aug95		Vegetation		O	3			✓
	16Aug95		Soil		S	16			✓

LAB USE ONLY

Turnaround Time:
X Standard Turnaround (10 Working Days)
(TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments:
Vegetation - ~~Cool~~ Ambient
Soil Cool

ARE SAMPLES:
☐ TOXIC? NA
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM MRTALS: X 100
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Gerpel	18/8/95	0700 am pm	Amy Gerpel	3D/E
Received By:	Martha Tezeld	18 Aug 95	10:30 am pm	Martha Tezeld	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 42838 FG 00051

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: OD B-13-I

Received From: 3D/Environmental Date/Time of Storage: 18 Aug 95 12:30 PM

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SV1-3	longleaf Pine	16/8/95	N/A	Ambient, No ice
SV1-2	White Oak	16/8/95	↓	↓
SV1-1	Tulip Poplar	16/8/95	↓	↓
SU1-1	Soil	8/16/95	N/A	Cool, in water
SU1-4	Soil	↓	↓	no ice
SU1-5	Soil	↓	↓	↓
SU1-6	Soil	↓	↓	↓
SM1-1	Soil	↓	↓	↓
SM1-3	Soil	↓	↓	↓
SM1-Dup-5	Soil	↓	↓	↓
SM1-6	Soil	↓	↓	21
SM3-3	Soil	↓	↓	↓
SB1-3	Soil	↓	↓	MAP
SB1-4	Soil	↓	↓	↓
SB1-5	Soil	↓	↓	↓
SB1-6	Soil	↓	↓	↓

(4) Taken from Fed Ex Label MAP 8-18-95

Prepared by: (1) MAP 18 Aug 95 Martha Pezold Date: 18 Aug 95

Checked by: Deborah Kerr Date: 21 Aug 95

Approved by: Martha Pezold Date: 21 Aug 95

Form #ACFS-22 (07/20/95)

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D / Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 3D / Environmental Date/Time of Storage: 18Aug95 12:30 pm

Method of Transportation: Fed Ex Date Shipped: 17Aug95 Date Received: 18Aug95

Sample ID	Matrix	Date Sampled	Weight	Comments
SB3-1	Soil	16Aug95	N/A	Cool in water
SB3-2	Soil	16Aug95	↓	No ice remaining
SB3-Dup#1	Soil	16Aug95	↓	

ENVIRONMENT
AUG 21 1995
MMP

Prepared by: Martha Pezold Date: 18Aug95

Checked by: Debora Kerr Date: 21Aug95

Approved by: Martha Pezold Date: 21Aug95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of abc Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati, OH 45233
Phone: (513)922-8199
Fax #: (513)922-9150

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fig Oil
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES 21Aug95

LAB USE ONLY

ABC/Pan-Ag Labs Job #:

Date Entered on LIMS:

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: / Client Sample Description	Location/Depth	Sample Type (S-Soil, L-Liquid, O-Other)	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	complete analysis for Fig Oil							
	16Aug95		soil		S	26		✓								

Turnaround Time:
X Standard Turnaround *(10 Working Days)*
(TPH, LUFT Samples - 5 Days)
____ Rush 5 Day
____ Rush 3 Day
____ Rush 2 Day
____ Rush 1 Day

Comments: Rec'd Ambient. No ice

ARE SAMPLES: NA
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE: (none)
NaOH
H2SO4
HNO3
HCl
ASCORBIC ACID

FOR CAM METALS: X ICP
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	18/8/95	0700 am pm	Amy Goebel	3D/E
Received By:	Martha Pezold	18 Aug 95	10:30 (am) pm	Martha Pezold	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

[redacted] EASE [redacted] THE [redacted] MBER [redacted] TED [redacted] E FO [redacted] MME [redacted] QUE [redacted] NS, A [redacted] UOT [redacted] NS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 42818R PG 00054

21

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 30/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 30/Environmental Date/Time of Storage: 18Aug95 10:30pm

Method of Transportation: Fed Ex Date Shipped: 17Aug95 Date Received: 18Aug95

Sample ID	Matrix	Date Sampled	Weight	Comments
SU2-1	Soil	16Aug95	N/A	Ambient - noise
SU2-2				
SU2-3				
SU2-4				
SU2-4 dup				
SU2-5				
SU2-6				
SU3-1				
SU3-4				
SU3-5				
SM2-1				
SM2-3				21 1535
SM2-4				MAP
SM2-5				
SM2-6	↓	↓	↓	

Prepared by: Martha Peyold Date: 18Aug95

Checked by: Deborah Kerr Date: 21Aug95

Approved by: Martha Peyold Date: 21Aug95

Form #ACFS-22 (07/20/95)

ABC 42818R PG 00855

25

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D\Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davies Storage Location: B-13-I

Received From: 3D\Environmental Date/Time of Storage: 18Aug95 12:30pm 1800

Method of Transportation: Fed Ex Date Shipped: 17Aug95 Date Received: 18Aug95

Sample ID	Matrix	Date Sampled	Weight	Comments
SM 3-1	Soil	16 Aug 95	N/A	Ambient, No Ice
SM 3-2	Soil			
SM3-4	Soil			
SB2-1	Soil			
SB2-3	Soil			
SB2-4	Soil			
SB2-5	Soil			
SB2-6	Soil			
SB3-3	Soil			
SB3-4	Soil			
SB3-6	Soil	↓	↓	
				DOCUMENT
				AUG 21 1995
				BY WMP
	MP 18Aug95			

Prepared by: Martha Reynolds Date: 18Aug95

Checked by: Deborah Cox Date: 21Aug95

Approved by: Martha Reynolds Date: 21Aug95

Form #ACFS-22 (07/20/95)

ABC 42818R P6 00056

26

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Lab Lab #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati-OH 45233
Phone: (513) 922-8199
Fax #: (513) 922-9120

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fog Dil/Ft McClellan
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: / Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete analysis for fuel
	16Aug95		Sediment		S	9			
	16Aug95		Water		L	11		11	

LAB USE ONLY

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
____ Rush 5 Day
____ Rush 3 Day
____ Rush 2 Day
____ Rush 1 Day

Comments:
4 Water Samp Broken. 2 Water Samp which were Unbroken had no label. 6 labels were found in cooler. Samples rec'd w/ Coal in Water - no ice remaining

ARE SAMPLES:
☐ TOXIC? NA
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID
X ICe

FOR CAM METALS:
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Gsebel	18/8/95	0700 am pm	AMY GSEBEL	3D/E
Received By:	Martha Pezold	18Aug 95	10:30 am pm	Martha Pezold	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 428188 P6 00057

27

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: ~~B-13-F~~ D (1)

Received From: 3D/Environmental Date/Time of Storage: 18 Aug 95 12:30

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SD3-1	Sediment	16/8/95	N/A	Rec'd Cool.
SD3-2				in water, ND
SD3-3				ice remaining
SD3-4				
SD3-5				
SD3-7				
SD3-8				
SD3-9				
SD3-10	↓			
SW3-1	water			
SW3-2				
SW3-3				
SW3-6				
SW3-8	↓	↓	↓	
	(1)(E) MAP 18 Aug 95			

AUG 21 1995

MAP

Prepared by: Martha Pezold Date: 18 Aug 95

Checked by: Deborah Kerr Date: 21 Aug 95

Approved by: Martha Pezold Date: 21 Aug 95

Form #ACFS-22 (07/20/95)

ABC 42618R PG 00058

ABC Laboratories, Inc

OBSERVATIONS AND/OR REMARKS FORM

Test Material: Fog Oil

Sample Type: Water

ABC Study No: 42818

Principal Analytical Investigator: Kelly Davis

Rec'd on 18 Aug 95

4 Bottles of water sample - Broken - no water remaining. No label remaining on broken bottles.

Also rec'd 2 Bottles of water with no label.

The following 6 labels were found in the shipping cooler.

SW3-4
SW3-5
SW3-7
SW3-9
SW3-10
SW3-10 Dup

Prepared By: Martha Pizzella Date: 18 Aug 95

Checked By: Kelly V. Davis Date: 21 Aug 95

Principal Analytical Investigator: Kelly V. Davis Date: 21 Aug 95

Form #AC-04 (01/02/92)

ABC Laboratories, Inc

OBSERVATIONS AND/OR REMARKS FORM

Test Material: _____

Sample Type: _____

ABC Study No: _____

Principal Analytical Investigator: _____

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #: 3D/E

DATE: 10/8/95 TIME: 1140 COLLECTED BY: ABG
SAMPLING SITE: Fog oil Project
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
SW3-1

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #: 3D/E

DATE: 10/8/95 TIME: 1254 COLLECTED BY: ABG
SAMPLING SITE: Fog oil Project
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
SW3-4

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #: 3D/E

DATE: 10/8/95 TIME: 1333 COLLECTED BY: ABG
SAMPLING SITE: Fog oil Project
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
SW3-7

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #: 3D/E

DATE: 10/8/95 TIME: 1402 COLLECTED BY: ABG
SAMPLING SITE: Fog oil Project
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
3D SW3-9

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #:

DATE: 10/8/95 TIME: 1419 COLLECTED BY: ABG
SAMPLING SITE: Site 3
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
SW3-10
c# 352193

EAGLE PICHER
ENVIRONMENTAL SCIENCE & TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container
Lot #:

DATE: 10/8/95 TIME: 1425 COLLECTED BY: ABG
SAMPLING SITE: Site 3
SAMPLE TYPE: ☐ Grab ☐ Composite ☐ Other
PRESERVATIVE
SW3-dup-10

Prepared By: _____ Date: _____

Checked By: Deborah Kerr Date: 21 August 95

Principal Analytical Investigator: _____ Date: _____

Form #AC-04 (01/02/92)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D/Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati OH 45233
Phone: (519) 922-8199
Fax #:

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fog Oil
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	composite analysis									
	7/8/95		Surface water	Site 4	L	11		/	/									
	7/8/95		Vegetation	Site 4	O	3			/									

LAB USE ONLY

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
FEB 5 1996
BY Kelly J. Owen

Turnaround Time:
X Standard Turnaround
(10 Working Days)
(TPH, LUFT Samples - 5 Days)
_____ Rush 5 Day
_____ Rush 3 Day
_____ Rush 2 Day
_____ Rush 1 Day

Comments:
Samples rec'd ambient; 2 labels fell off of the samples; because of the labels location in cooler, they were put on the samples they were thought to have come off of and marked as unknowns with a question mark on the sample - samples stored in walk-in refr 0
8-22-95 4:15
TTB 8-22-95

ARE SAMPLES: NA
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS: X ice
☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	8/8/95	1900 am pm	Amy Goebel	3D/E
Received By:	Timothy T. Burks	8-22-95	10:00 am pm	Timothy T. Burks	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

ABC 42818R PG 00004

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 428218

Client: 30 / Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: D

Received From: 30 Environmental Date/Time of Storage: 3:55 8-22-95

Method of Transportation: fed Ex Date Shipped: 8-18-95 Date Received: 8-22-95

Sample ID	Matrix	Date Sampled	Weight	Comments
SV4-1	Leaves / bark	8-17-95	-	samples rec'd
SV4-2	Leaves / bark	8-17-95	-	ambient. TTB
SV4-3	Leaves / bark	8-17-95	-	8-22-95
SW4-1	Water	8-17-95	-	
SW4-3	Water	8-17-95	-	
SW4-4	Water	8-17-95	-	
SW4-5	Water	8-17-95	-	
SW4-6	Water	8-17-95	-	
SW4-7	Water	8-17-95	-	
SW4-dup-7	Water	8-17-95	-	
SW4-8	Water	8-17-95	-	
SW4-10	Water	8-17-95	-	
—	—	—	—	[illegible] sample bottles were [illegible]
SW4-2	Water	8-17-95	-	in the cooler - they were placed on the bottles they are thought to come from and the bottles marked
SW4-9	Water	8-17-95	-	① E TTB 8-22-95 TTB 8-22-95

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"

AUG 24 1995

BY MAP

Prepared by: Timothy G. Burks Date: 8-22-95

Checked by: Martha Pizzella Date: 8-23-95

Approved by: Martha Pizzella Date: 8-23-95

Form #ACFS-22 (07/20/95)

Pan-Ag Labs *(Environmental Chemistry Analysis)*
32380 Avenue 10 • Madera, California 93638
(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:
Date Entered on LIMS:
Customer Name: 3D Environmental
Address: 781 Neeb Road
City, State, Zip: Cincinnati OH 45233
Phone: (513) 922-8199
Fax #:

REPORT INFORMATION

Report Attention: Angela Schmidt
Project, P.O. #: 07732219
Project Name: Fox DC
Project Manager:
Copy To: Angela Schmidt

REQUESTED ANALYSES

Lab Sample I.D.#	Date Sampled	Time Sampled	Sampler: Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O = Other	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	Complete Analyses for Fuel Oil
	17/8/95		Sediment	Site 4	S	11		1	
	17/8/95		~~Sediment~~	~~Site 4~~	~~S~~	~~11~~			
			Soil	Site 4	S	20		1	

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
AUG 24 1995
MWP

LAB USE ONLY

Turnaround Time:
X Standard Turnaround *(10 Working Days)*
(TPH, LUFT Samples - 5 Days)
____ Rush 5 Day
____ Rush 3 Day
____ Rush 2 Day
____ Rush 1 Day

Comments: Rec'd Ambient

ARE SAMPLES:
☐ TOXIC? N/A
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH
☐ H_2SO_4
☐ HNO_3
☐ HCl
☐ ASCORBIC ACID X ice

FOR CAM METALS: ☐ STLC ☐ TTLC

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Amy Goebel	17/8/95	1900 am pm	Amy Goebel	3DE
Received By:	Martha Pezold	22 Aug 95	10:30 am pm	Martha Pezold	ABC
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE

ABC 428108 pg 00063

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 3D/Environmental Date/Time of Storage: 24Aug95 1215 308m

Method of Transportation: ~~Fed Ex~~ Date Shipped: 18Aug95 Date Received: 22Aug95

Sample ID	Matrix	Date Sampled	Weight	Comments
SU4-1	Soil	8-17-95	N/A	Rec'd ambient
SU4-2				Stored B11-aisle
SU4-3				22-Aug 95
SU4-4				
SU4-5				
SU4-6				
SU4-Dup-6	↓	↓	↓	
SM4-1	Soil	8-17-95	N/A	
SM4-2				
SM4-3				
SM4-4				
SM4-5				
SM4-6				
SB4-1				
SB4-2				
SB4-Dup-2	↓	↓	↓	↓

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"

AUG 24 1995

BY MLP

Prepared by: Martha Peyold Date: 8-24-95

Checked by: Timothy A. Bucks Date: 8-24-95

Approved by: Martha Peyold Date: 8-24-95

Form #ACFS-22 (07/20/95)

ABC Laboratories, Inc.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: So. B-13-I Sol. = Drying

Received From: 3D/Environmental Date/Time of Storage: 24 Aug 95 12:30 pm

Method of Transportation: Fed Ex Date Shipped: 18 Aug 95 Date Received: 22 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SB4-3	Soil	8-17-95	N/A	Rec'd ambient
SB4-4				Stored B-11-aisle
SB4-5				22 Aug 95
SB4-6	↓			
SD4-1	Sediment			
SD4-2				
SD4-3				
SD4-4				
SD4-5				
SD4-6				
SD4-7				
SD4-dup-7				
SD4-8				
SD4-9				
SD4-10	↓	↓	↓	

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
AUG 24 1995
BY

Prepared by: Marsha Tyrrell Date: 8-24-95

Checked by: Timothy A. Burks Date: 8-24-95

Approved by: Marsha Tyrrell Date: 8-24-95

Form #ACFS-22 (07/20/95)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/fog/Fog0301003.d
Operator: Kelly Davis
Date Acquired: Wed Oct 11 95 09:00:15 AM
Sample Name: 10 ug/ml PAH's
Misc Info:
Sequence Index: 1 **Bottle Number:** 3 **Repetition Number:** 1

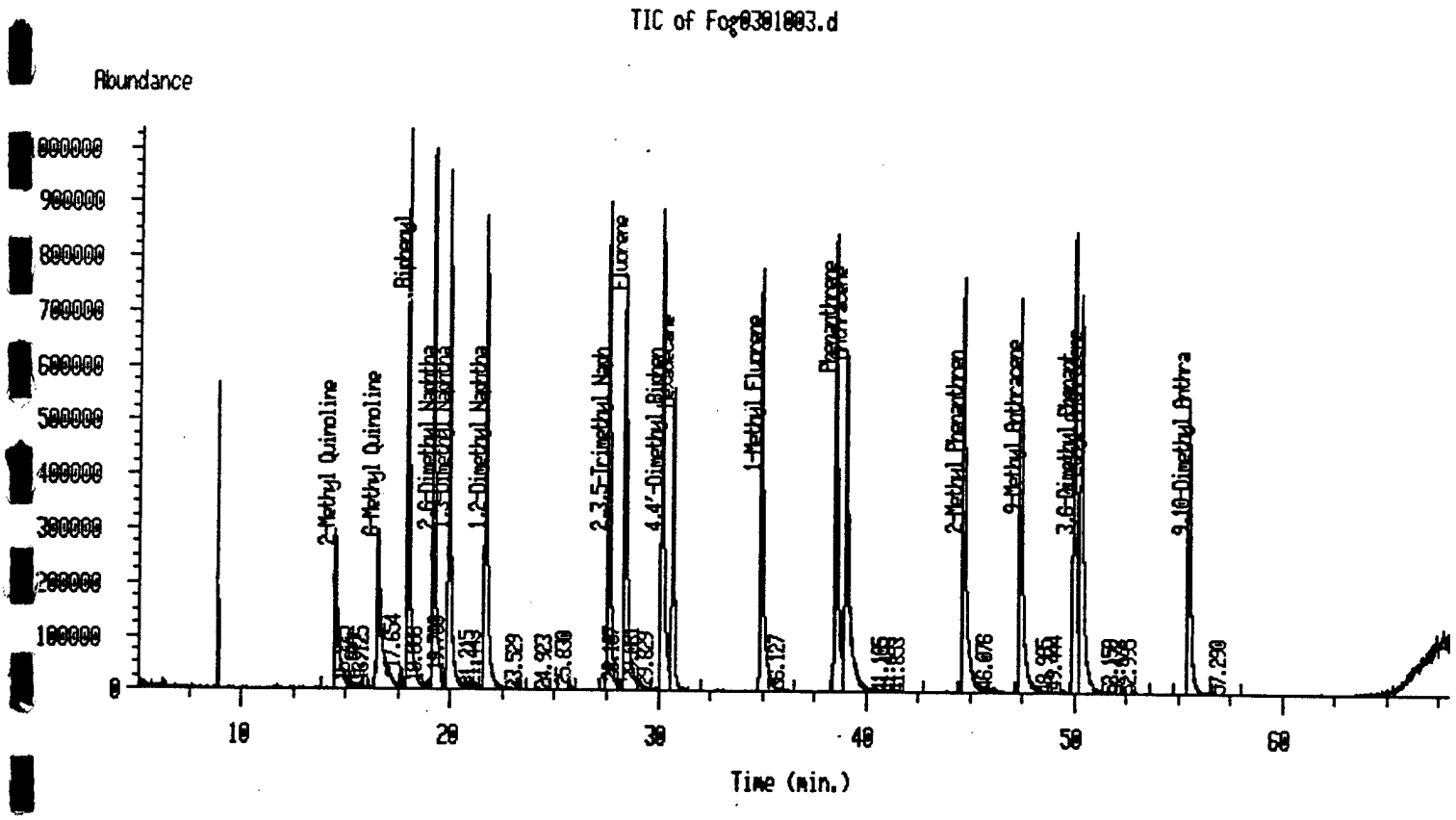
Fog Oil PAH's

Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

Reference Peak Window: 5.000 % of Retention Time
Non-reference Peak Window: 5.000 % of Retention Time

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	BH	14.503	Total Ion	2-Methyl Quinoline	32299709	10.59 ug/mL
2	VH	16.529	Total Ion	6-Methyl Quinoline	43702704	11.03 ug/mL
3	VH	17.933	Total Ion	Biphenyl	81634491	10.08 ug/mL
4	VH	19.155	Total Ion	2,6-Dimethyl Naphtha	79811820	10.09 ug/mL
5	VH	19.903	Total Ion	1,3-Dimethyl Naphtha	83560133	10.17 ug/mL
6	PH	21.653	Total Ion	1,2-Dimethyl Naphtha	81115214	10.20 ug/mL
7	PH	27.562	Total Ion	2,3,5-Trimethyl Naph	86291667	10.18 ug/mL
8	VH	28.358	Total Ion	Fluorene	82887351	10.17 ug/mL
9	VH	30.155	Total Ion	4,4'-Dimethyl Biphen	84248766	10.27 ug/mL
10	VH	30.698	Total Ion	Hexadecane	48899278	10.10 ug/mL
11	BH	34.912	Total Ion	1-Methyl Fluorene	80957983	10.22 ug/mL
12	BH	38.501	Total Ion	Phenanthrene	86582300	10.15 ug/mL
13	VH	39.009	Total Ion	Anthracene	86721254	10.22 ug/mL
14	BH	44.649	Total Ion	2-Methyl Phenanthren	85603102	10.22 ug/mL
15	PH	47.383	Total Ion	9-Methyl Anthracene	79862691	10.15 ug/mL
16	PH	49.971	Total Ion	3,6-Dimethyl Phenant	81253819	10.07 ug/mL
17	VH	50.294	Total Ion	2-Ethyl Anthracene	85406239	10.14 ug/mL
18	PH	55.460	Total Ion	9,10-Dimethyl Anthra	55718891	10.15 ug/mL


TIC of Fo0301003.d
Abundance
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
2-Methyl Quinoline
6-Methyl Quinoline
Biphenyl
2,6-Dimethyl Naptha
1,2-Dimethyl Naptha
2,3,5-Trimethyl Nath
Fluorene
4,4'-Dimethyl Biphen
1-Methyl Fluorene
Phenanthrene
2-Methyl Phenanthren
9-Methyl Anthracene
3,6-Dimethyl Phenanth
9,10-Dimethyl Anthra
10
20
30
40
50
60
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/fog/Fog0401004.d
Operator: Kelly Davis
Date Acquired: Wed Oct 11 95 10:59:58 AM
Sample Name: 5 ug/ml PAH's
Misc Info:
Bottle Number: 4 **Repetition Number:** 1

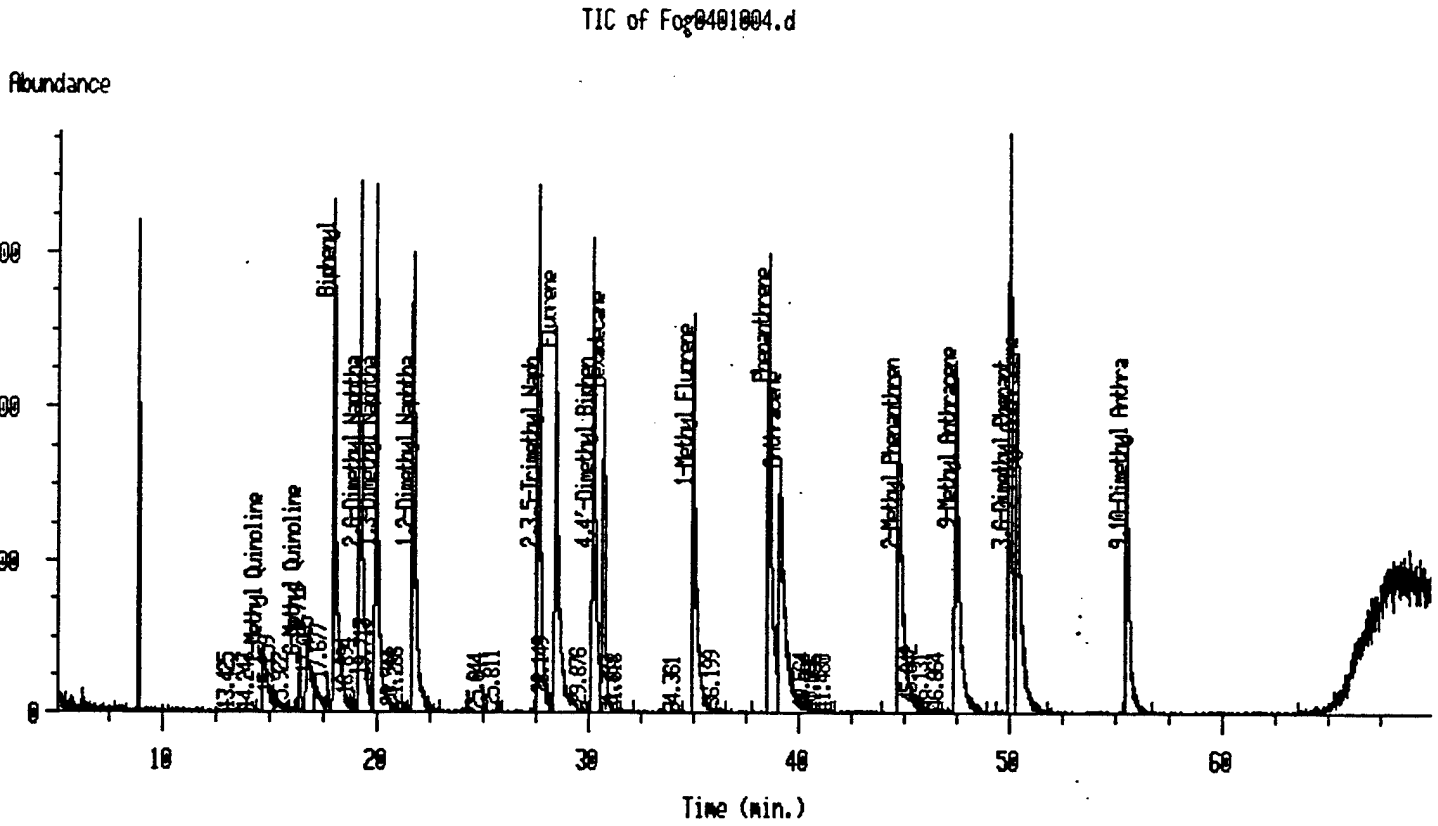
Fog Oil PAH's

Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

Reference Peak Window: 5.000 % of Retention Time
Non-reference Peak Window: 5.000 % of Retention Time

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	PH	14.666	Total Ion	2-Methyl Quinoline	7132669	3.674 ug/mL
2	VH	16.399	Total Ion	6-Methyl Quinoline	2228434	2.685 ug/mL
3	PH	17.953	Total Ion	Biphenyl	34041441	4.825 ug/mL
4	PH	19.169	Total Ion	2,6-Dimethyl Naphtha	32689754	4.787 ug/mL
5	VH	19.907	Total Ion	1,3-Dimethyl Naphtha	34352724	4.615 ug/mL
6	PH	21.664	Total Ion	1,2-Dimethyl Naphtha	31990401	4.545 ug/mL
7	BH	27.566	Total Ion	2,3,5-Trimethyl Naph	34360858	4.585 ug/mL
8	PH	28.387	Total Ion	Fluorene	33669392	4.621 ug/mL
9	PH	30.177	Total Ion	4,4'-Dimethyl Biphen	30018159	4.395 ug/mL
10	VH	30.688	Total Ion	Hexadecane	21447455	4.770 ug/mL
11	PH	34.934	Total Ion	1-Methyl Fluorene	30739918	4.512 ug/mL
12	BH	38.533	Total Ion	Phenanthrene	35127778	4.657 ug/mL
13	VH	39.073	Total Ion	Anthracene	32959879	4.499 ug/mL
14	BH	44.697	Total Ion	2-Methyl Phenanthren	32473390	4.506 ug/mL
15	PH	47.411	Total Ion	9-Methyl Anthracene	32500570	4.669 ug/mL
16	PH	49.965	Total Ion	3,6-Dimethyl Phenant	35366296	4.840 ug/mL
17	VH	50.306	Total Ion	2-Ethyl Anthracene	34740062	4.675 ug/mL
18	BH	55.482	Total Ion	9,10-Dimethyl Anthra	22319242	4.669 ug/mL


TIC of Fog0401004.d
Abundance
Biphenyl
2,6-Dimethyl Naphtha
1,2-Dimethyl Naphtha
2,3,5-Trimethyl Naph
Fluorene
4,4'-Dimethyl Biphen
1-Methyl Fluorene
Phenanthrene
2-Methyl Phenanthren
9-Methyl Anthracene
9,10-Dimethyl Anthra
0
100000
200000
10
20
30
40
50
60
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/fog/Fog0501005.d
Operator: Kelly Davis
Date Acquired: Wed Oct 11 95 12:52:50 PM
Sample Name: 1 ug/ml PAH's
Misc Info:
Bottle Number: 5 **Repetition Number:** 1

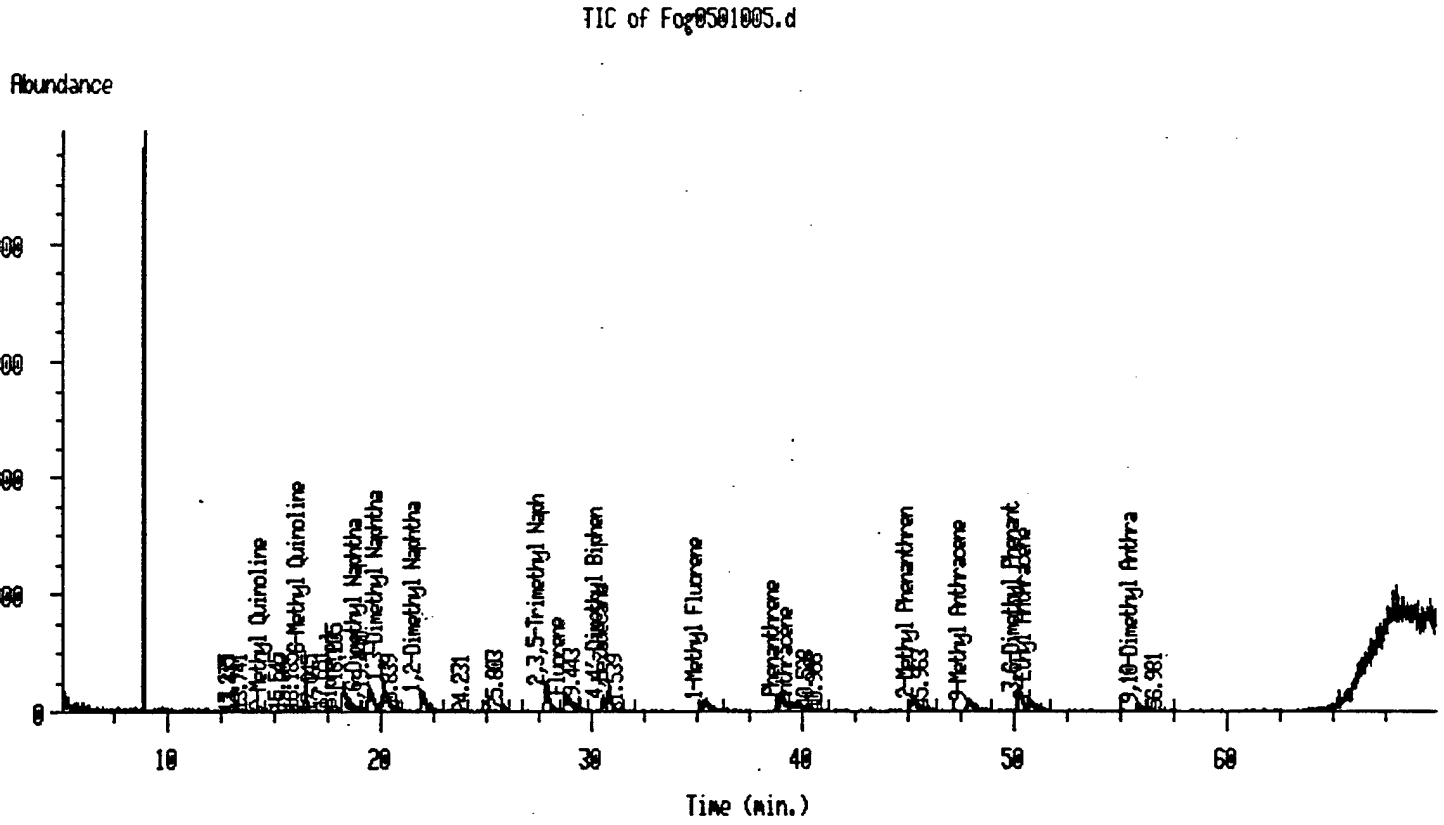
Fog Oil PAH's

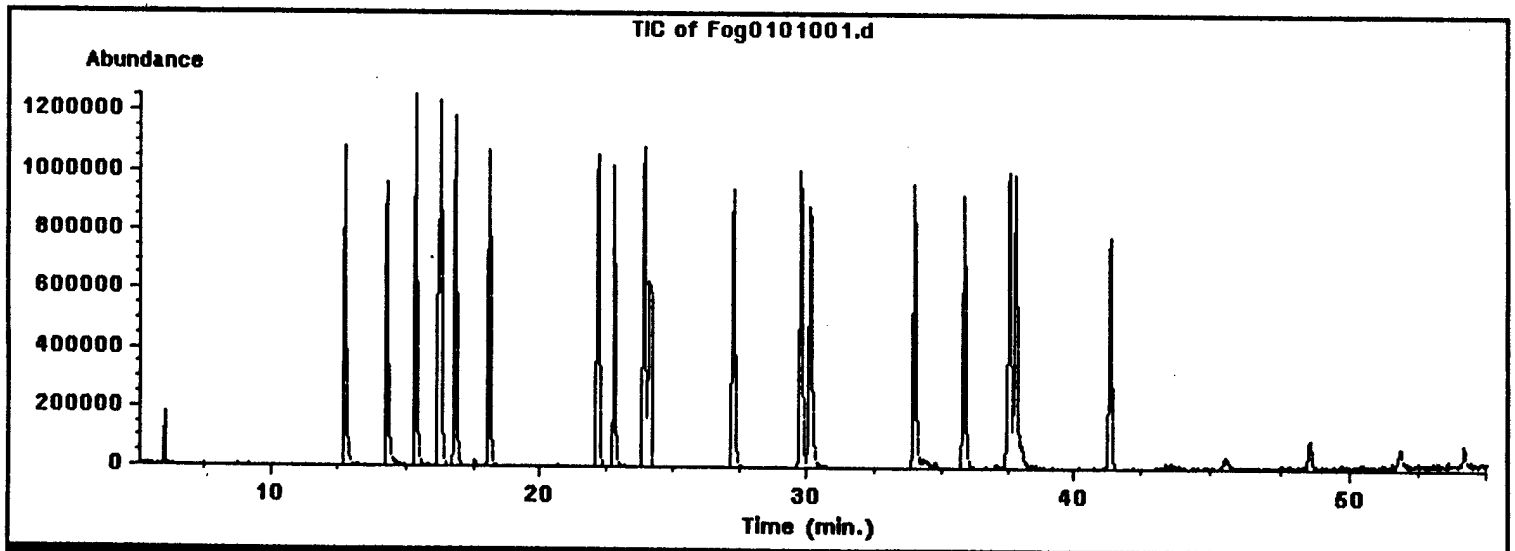
Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

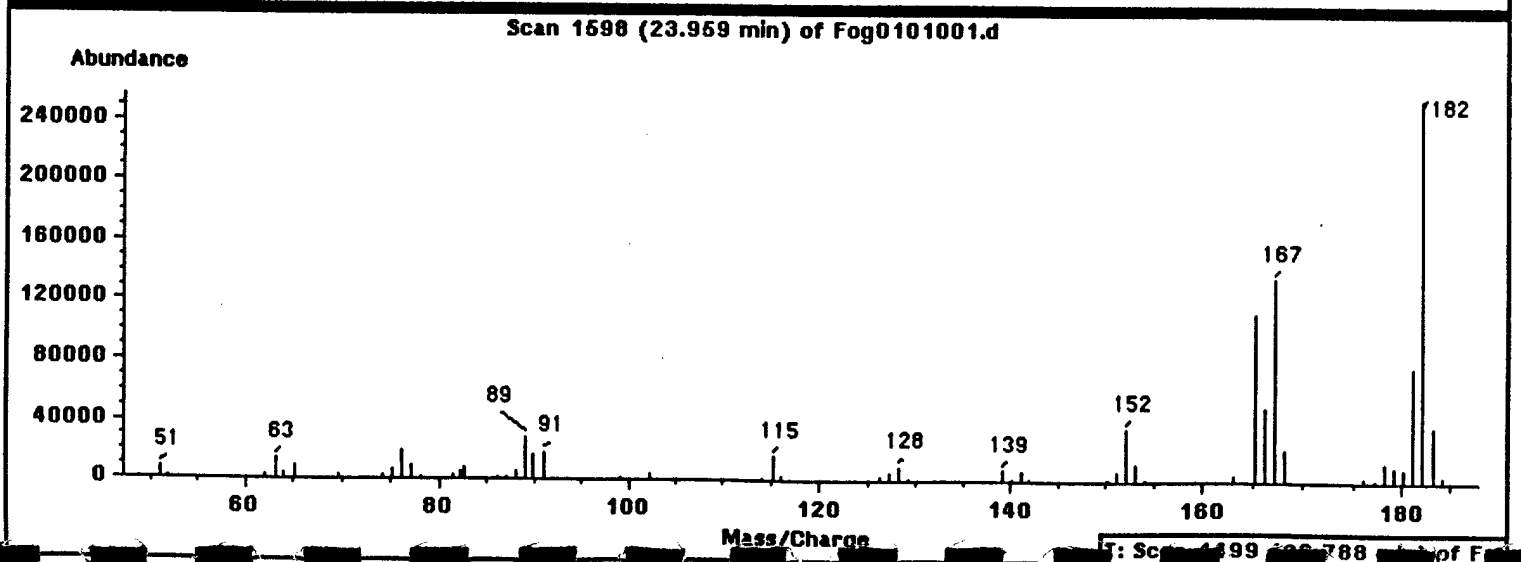
Reference Peak Window: 5.000 % of Retention Time
Non-reference Peak Window: 5.000 % of Retention Time

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	PH	14.648	Total Ion	2-Methyl Quinoline	79877	1.736 ug/mL
2	PH	16.423	Total Ion	6-Methyl Quinoline	2428893	2.726 ug/mL
3	PH	17.923	Total Ion	Biphenyl	271208	1.097 ug/mL
4	PH	19.132	Total Ion	2,6-Dimethyl Naphtha	119667	1.118 ug/mL
5	VH	20.105	Total Ion	1,3-Dimethyl Naphtha	4233878	1.214 ug/mL
6	PH	21.878	Total Ion	1,2-Dimethyl Naphtha	3400642	1.253 ug/mL
7	BH	27.761	Total Ion	2,3,5-Trimethyl Naph	3243393	1.230 ug/mL
8	PH	28.757	Total Ion	Fluorene	3414317	1.211 ug/mL
9	PH	30.504	Total Ion	4,4'-Dimethyl Biphen	1766883	1.336 ug/mL
10	VH	30.797	Total Ion	Hexadecane	2702024	1.128 ug/mL
11	BH	35.269	Total Ion	1-Methyl Fluorene	2214320	1.271 ug/mL
12	BH	38.960	Total Ion	Phenanthrene	2665997	1.190 ug/mL
13	VH	39.541	Total Ion	Anthracene	2713257	1.278 ug/mL
14	BH	45.263	Total Ion	2-Methyl Phenanthren	2414277	1.274 ug/mL
15	BH	47.784	Total Ion	9-Methyl Anthracene	2360146	1.184 ug/mL
16	BH	50.236	Total Ion	3,6-Dimethyl Phenant	2471896	1.089 ug/mL
17	VH	50.786	Total Ion	2-Ethyl Anthracene	2373281	1.181 ug/mL
18	BH	55.820	Total Ion	9,10-Dimethyl Anthra	1076171	1.184 ug/mL

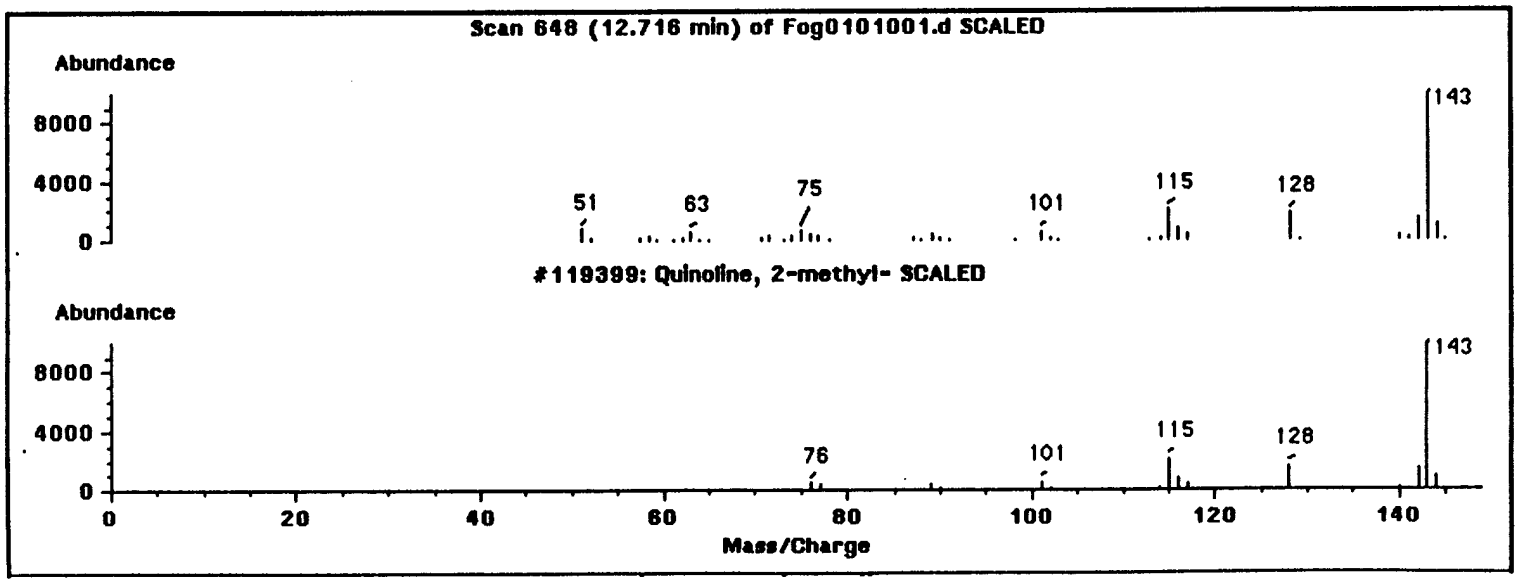

TIC of Fo@0501005.d
Abundance
0
10
20
30
40
50
60
Time (min.)
1-Methyl Fluorene
Phenanthrene
2-Methyl Phenanthren
2-Methyl Anthracene
3,10-Dimethyl Anthra

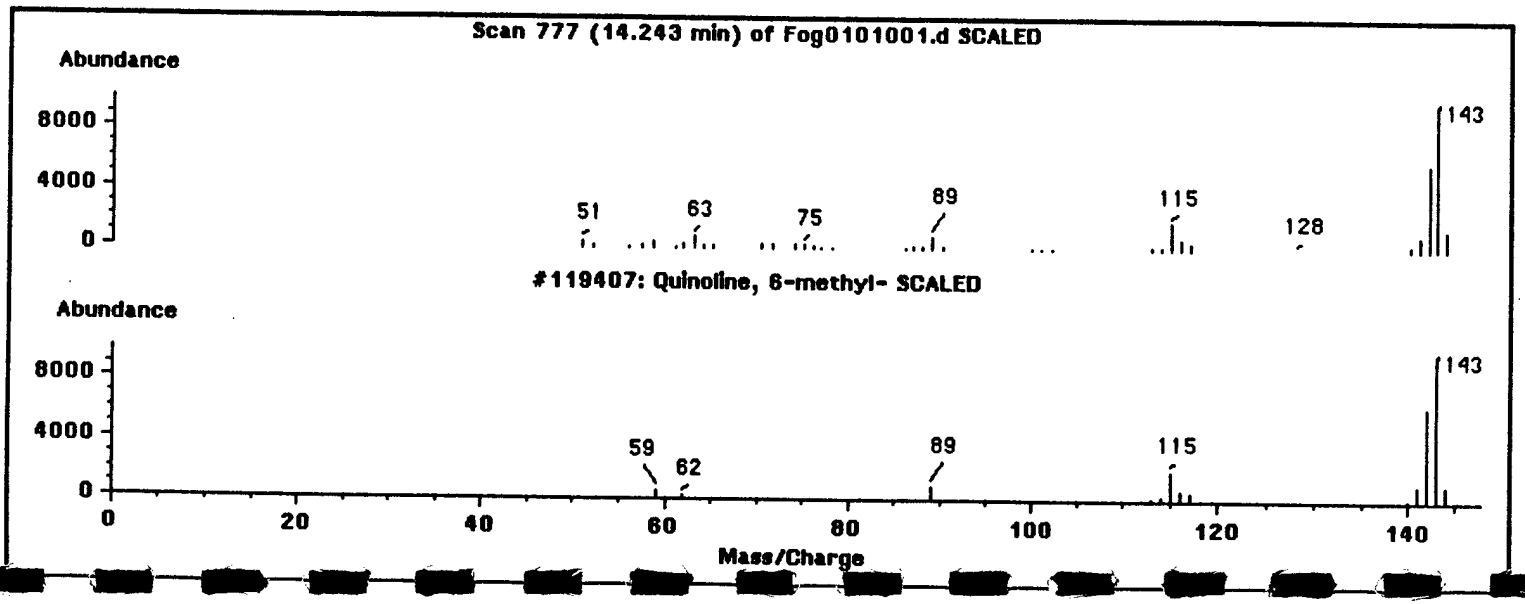


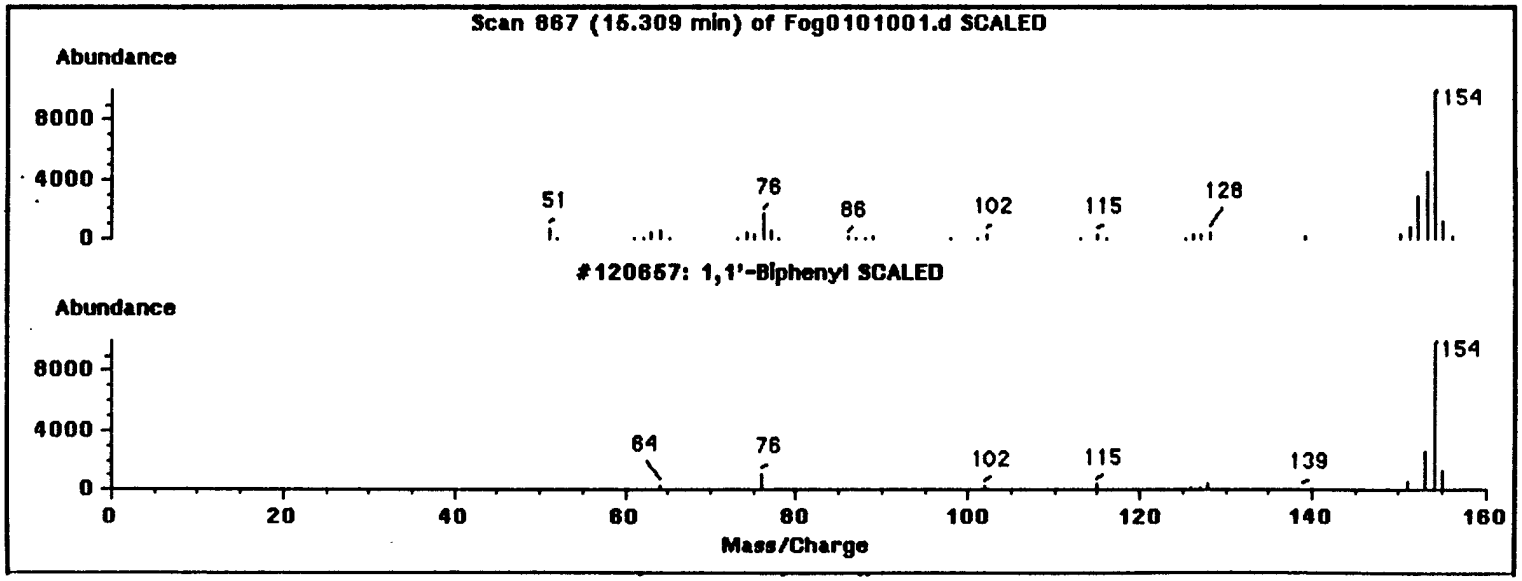


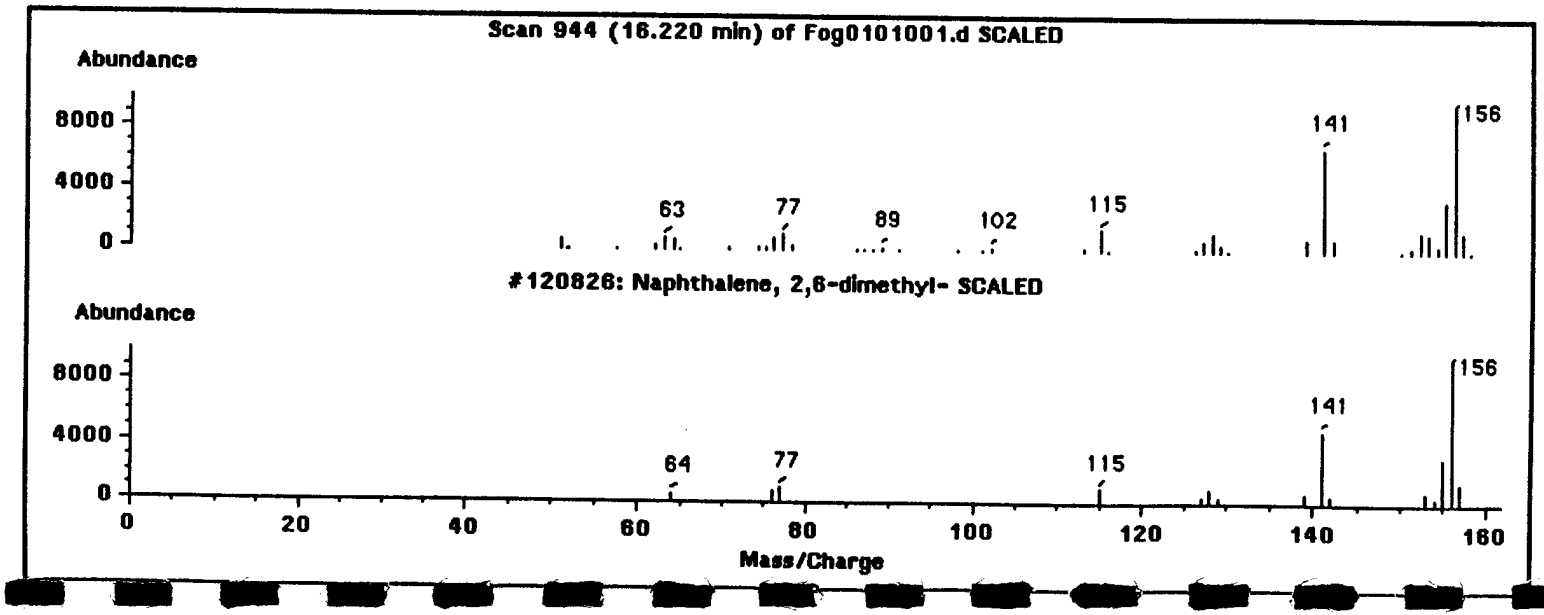
10 µg/mL
PAH's

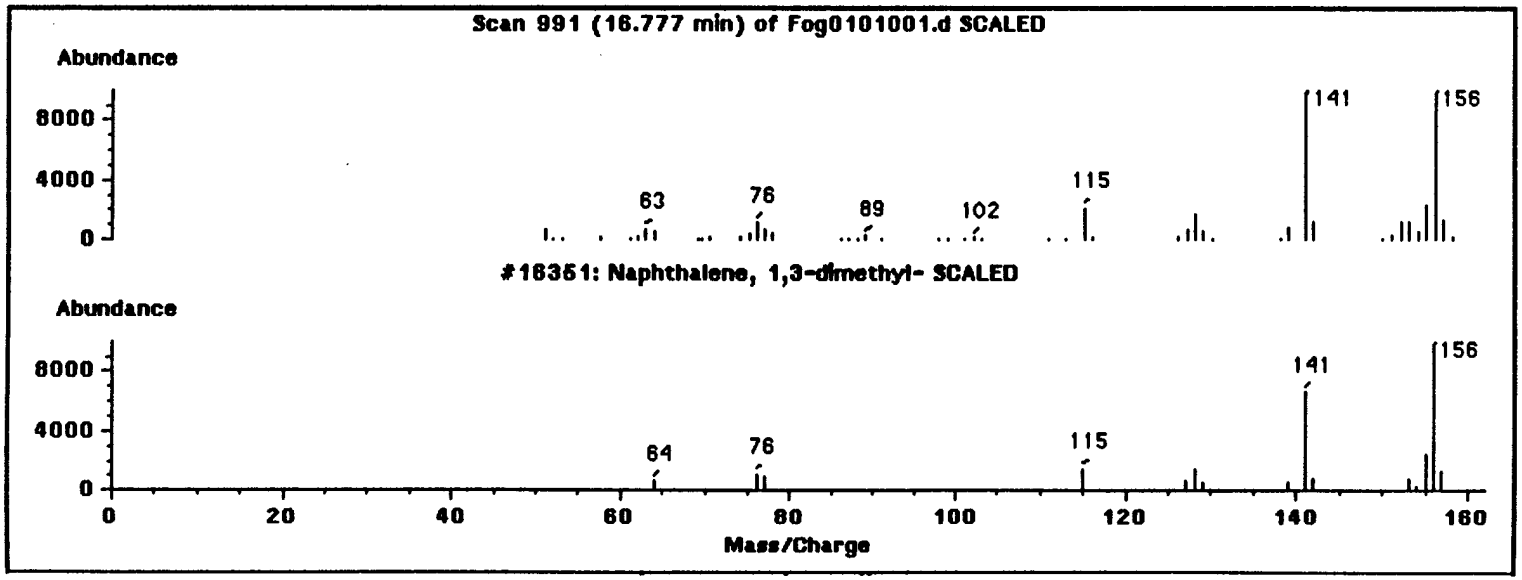
50°, 1 min
30°/min to 80
3°/min to 260
20°/min to 300
hold 6 min

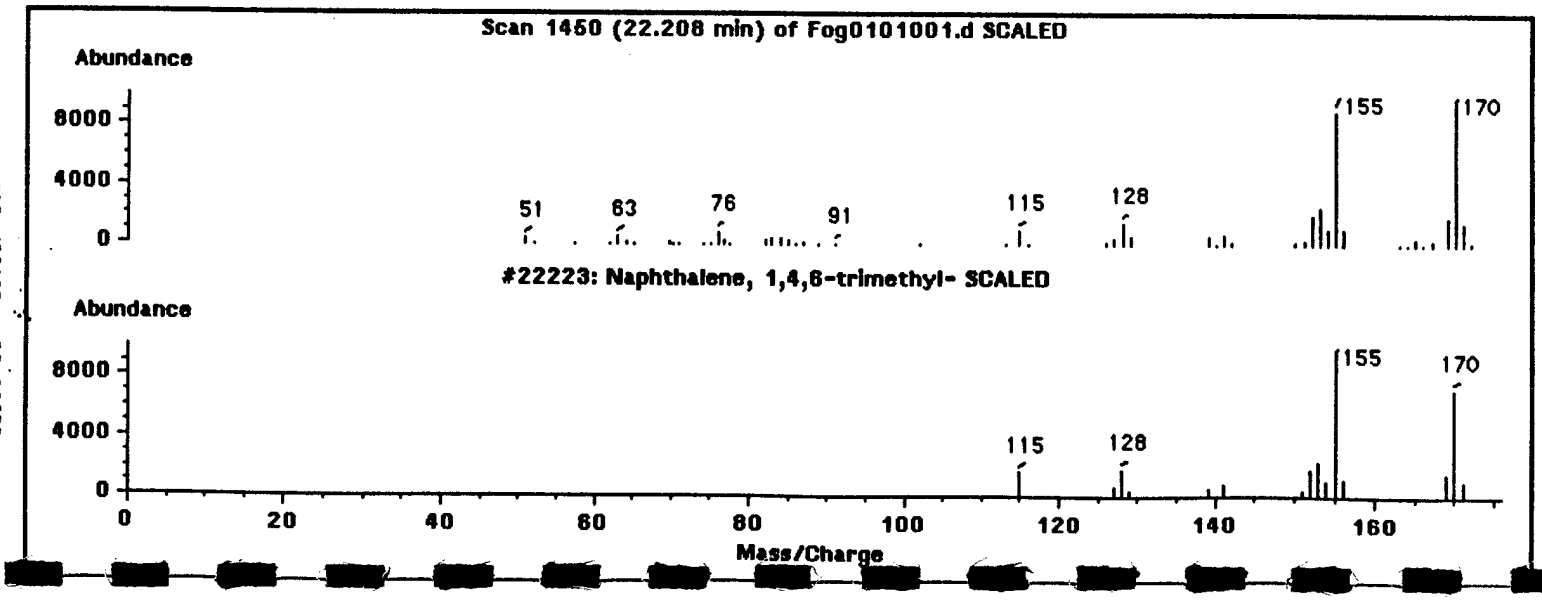


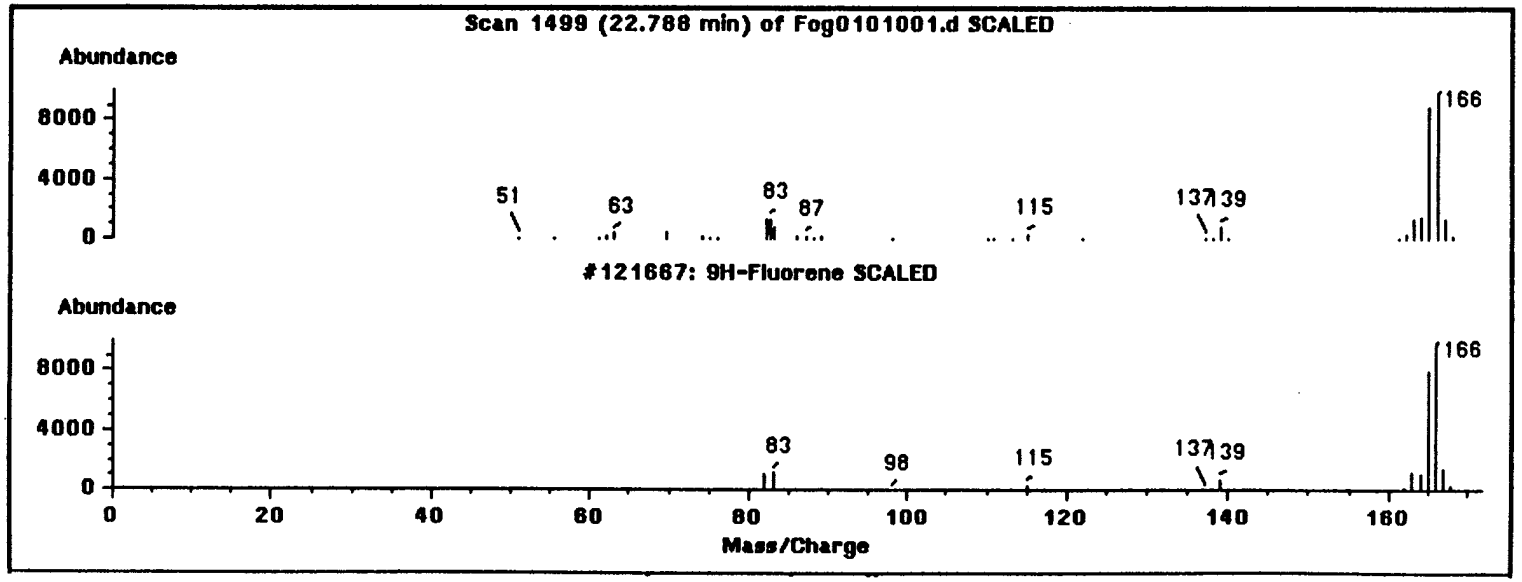


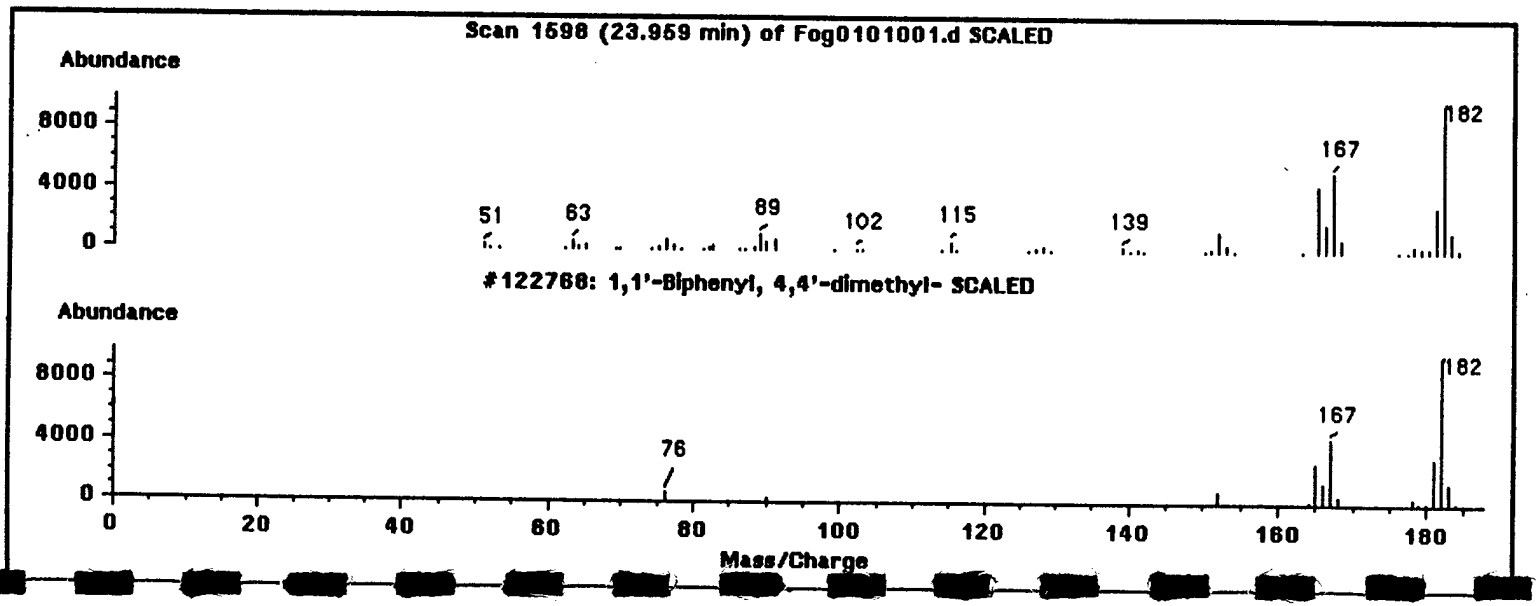


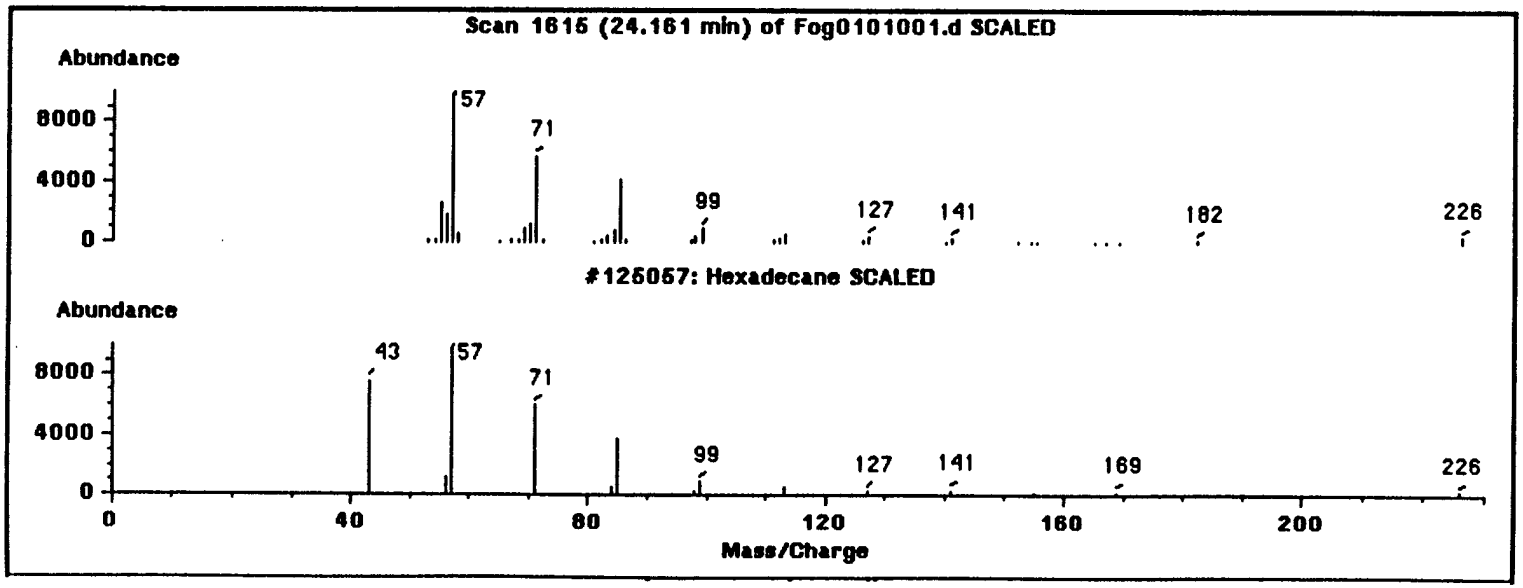


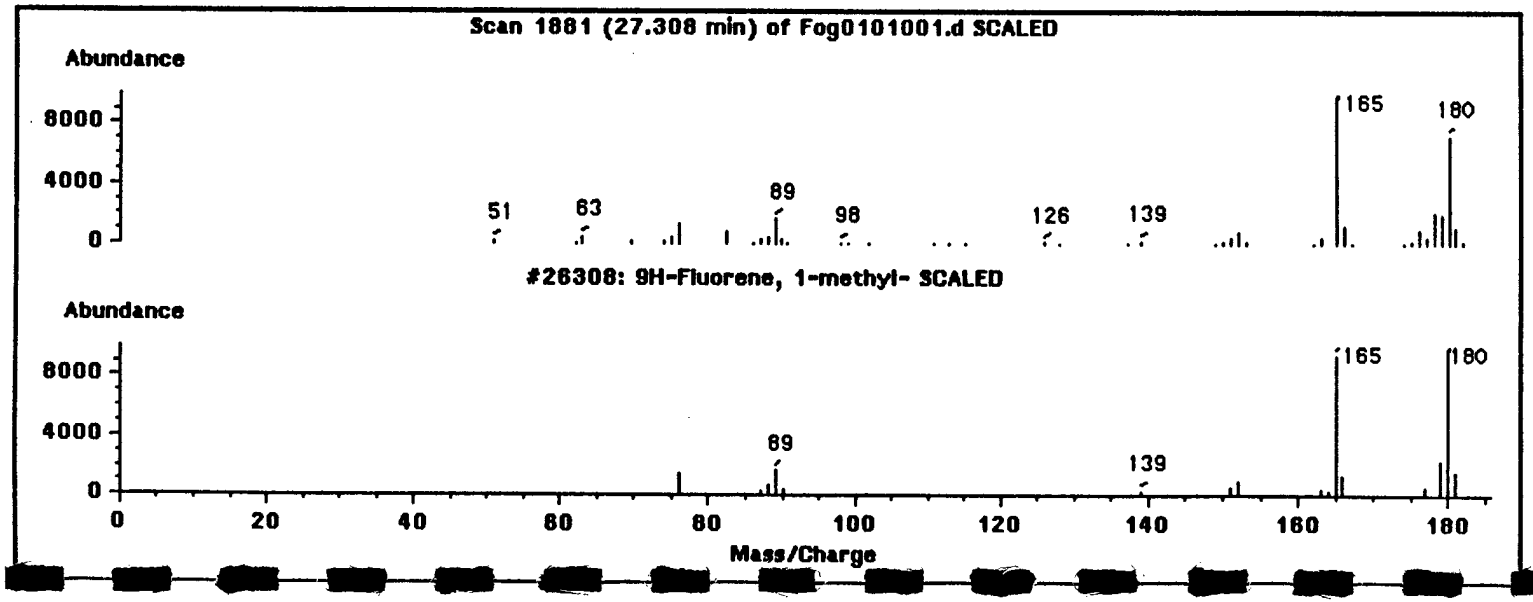

Scan 991 (16.777 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
63
76
89
102
115
141
156
#16351: Naphthalene, 1,3-dimethyl- SCALED
Abundance
8000
4000
0
64
76
115
141
156
0
20
40
60
80
100
120
140
160
Mass/Charge

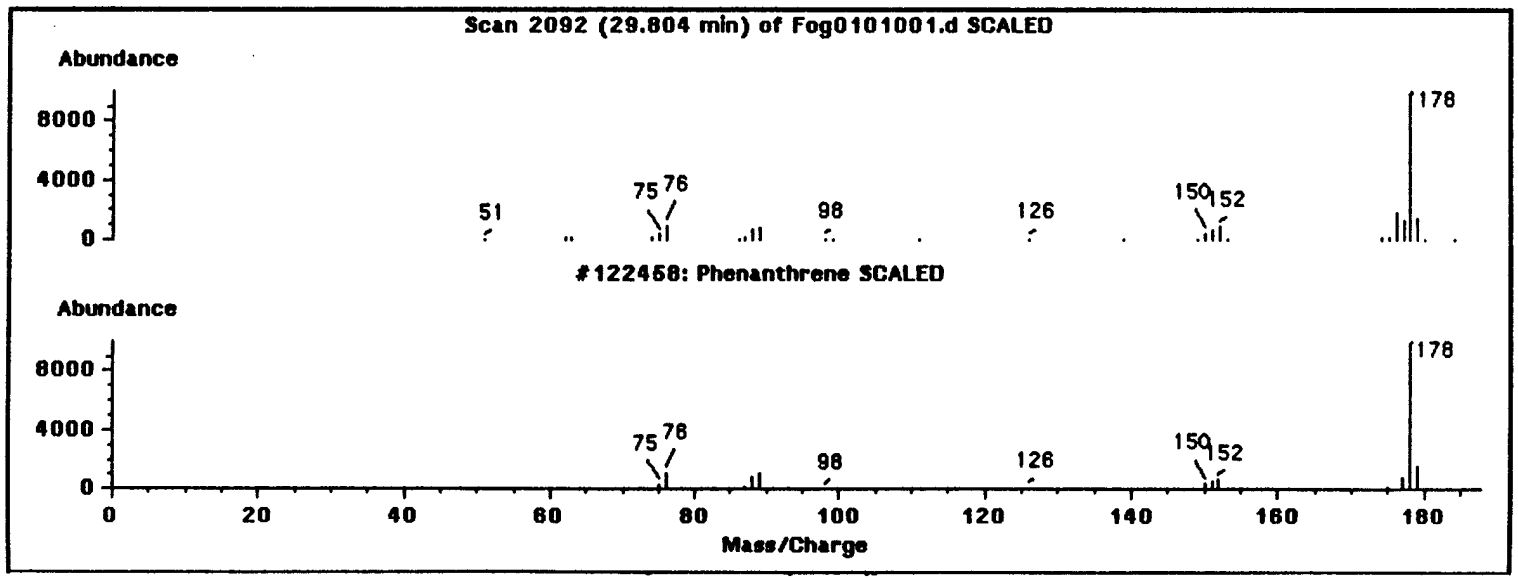


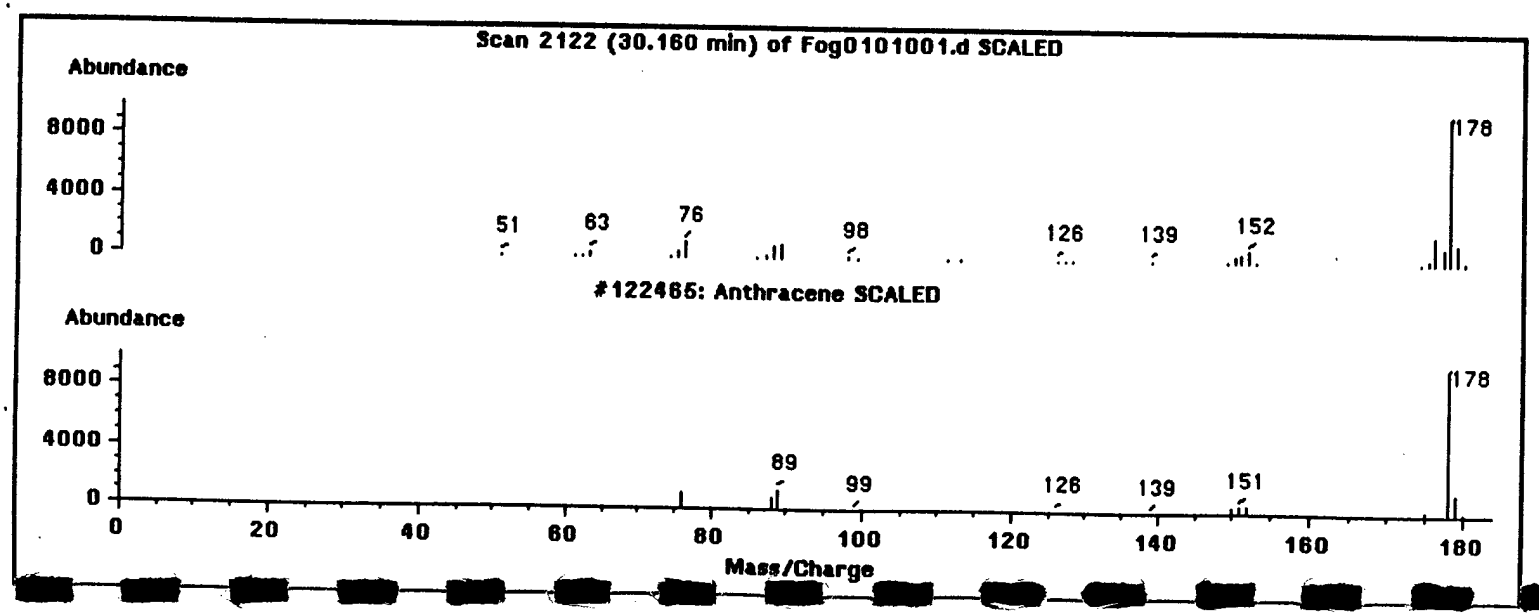

Scan 1499 (22.788 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
51
63
83
87
115
137
139
166
#121667: 9H-Fluorene SCALED
Abundance
8000
4000
0
83
98
115
137
139
166
0
20
40
60
80
100
120
140
160
Mass/Charge

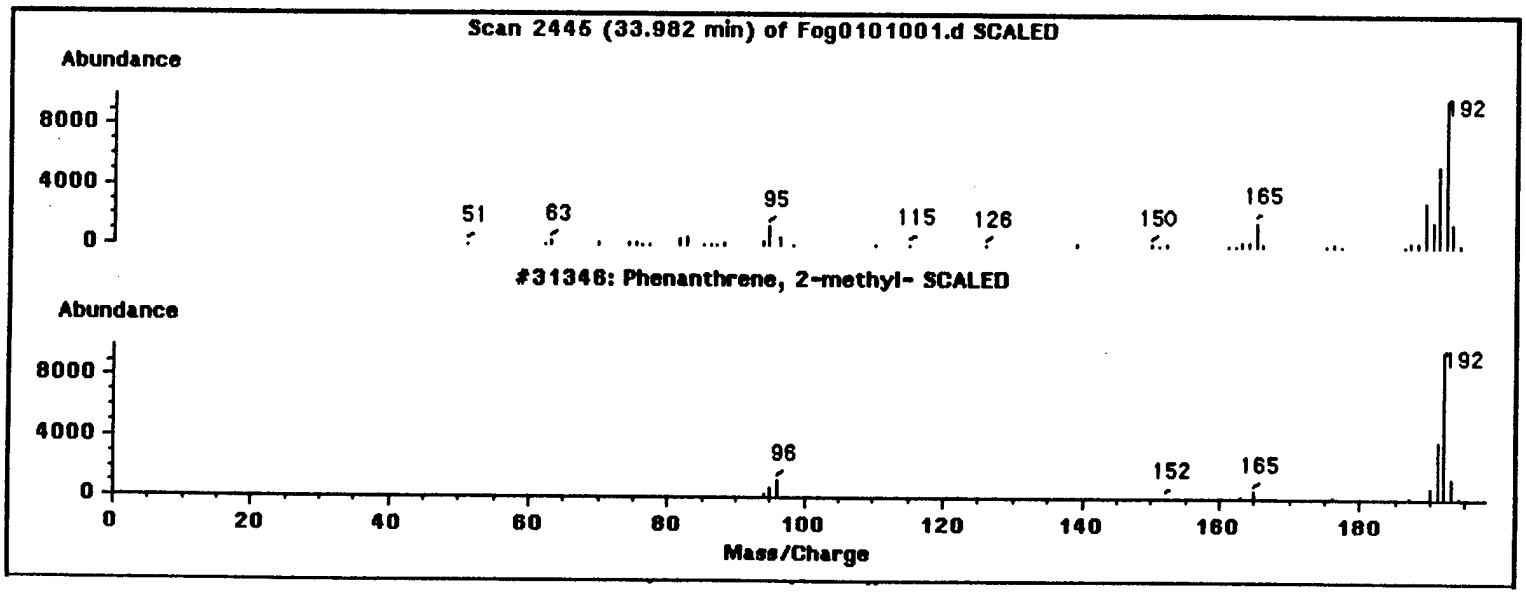

Scan 1598 (23.959 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
51
63
89
102
115
139
167
182
#122768: 1,1'-Biphenyl, 4,4'-dimethyl- SCALED
Abundance
8000
4000
0
76
167
182
0
20
40
60
80
100
120
140
160
180
Mass/Charge

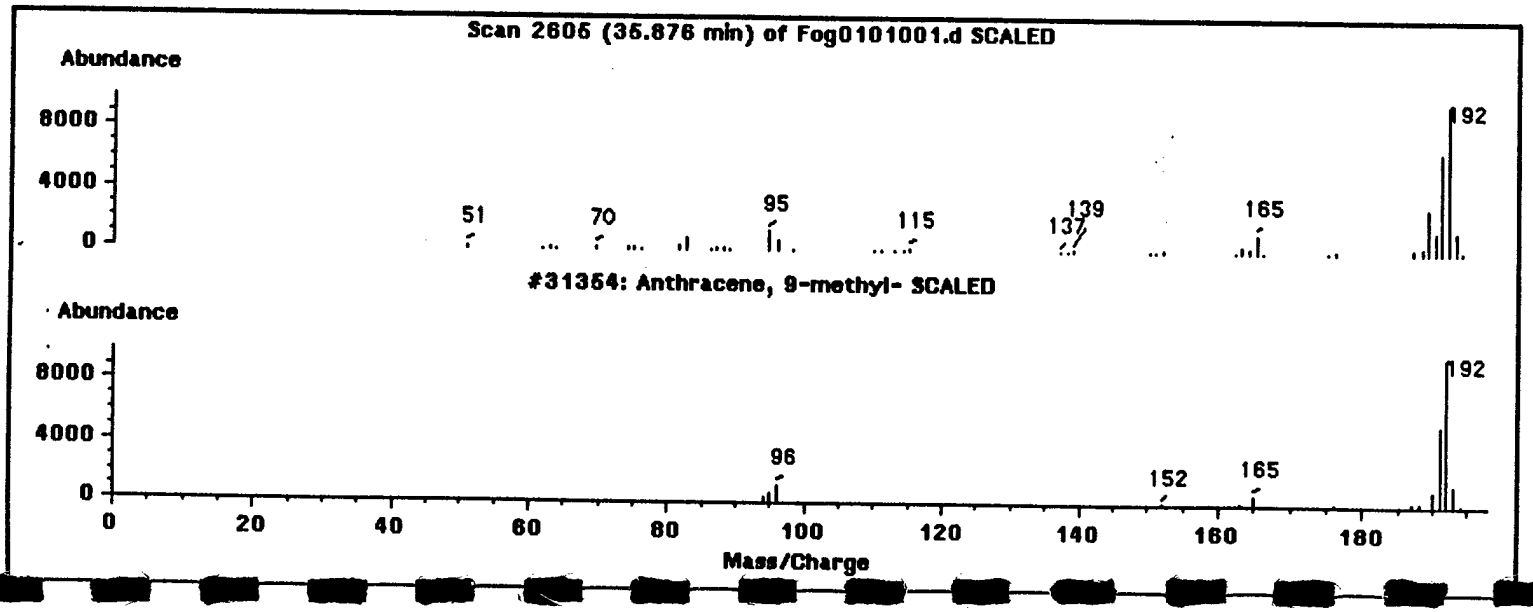

Scan 1615 (24.161 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
57
71
99
127
141
182
226
#125057: Hexadecane SCALED
Abundance
8000
4000
0
43
57
71
99
127
141
169
226
0
40
80
120
160
200
Mass/Charge

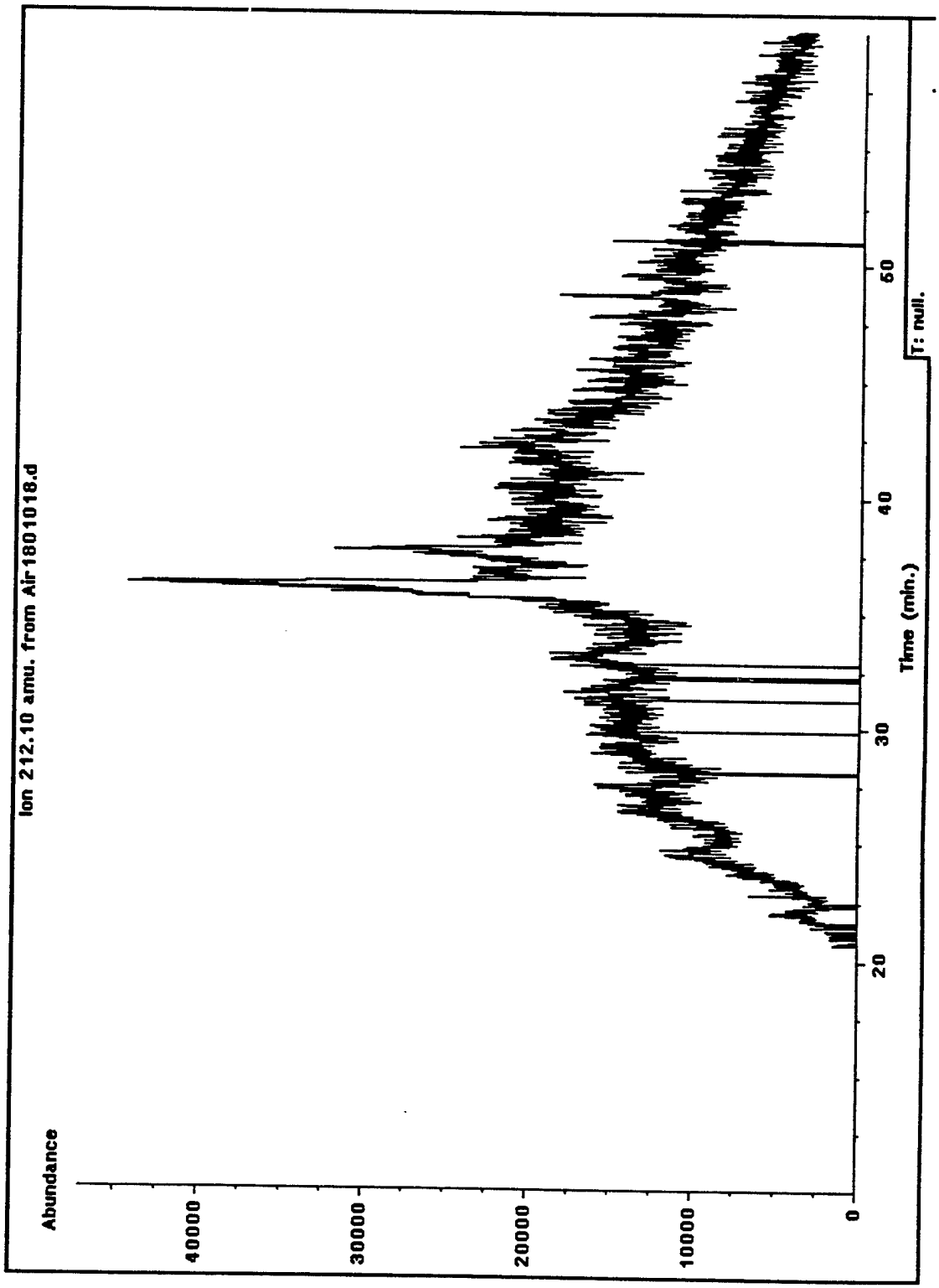

Scan 1881 (27.308 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
51
63
89
98
126
139
165
180
#26308: 9H-Fluorene, 1-methyl- SCALED
Abundance
8000
4000
0
89
139
165
180
0
20
40
60
80
100
120
140
160
180
Mass/Charge

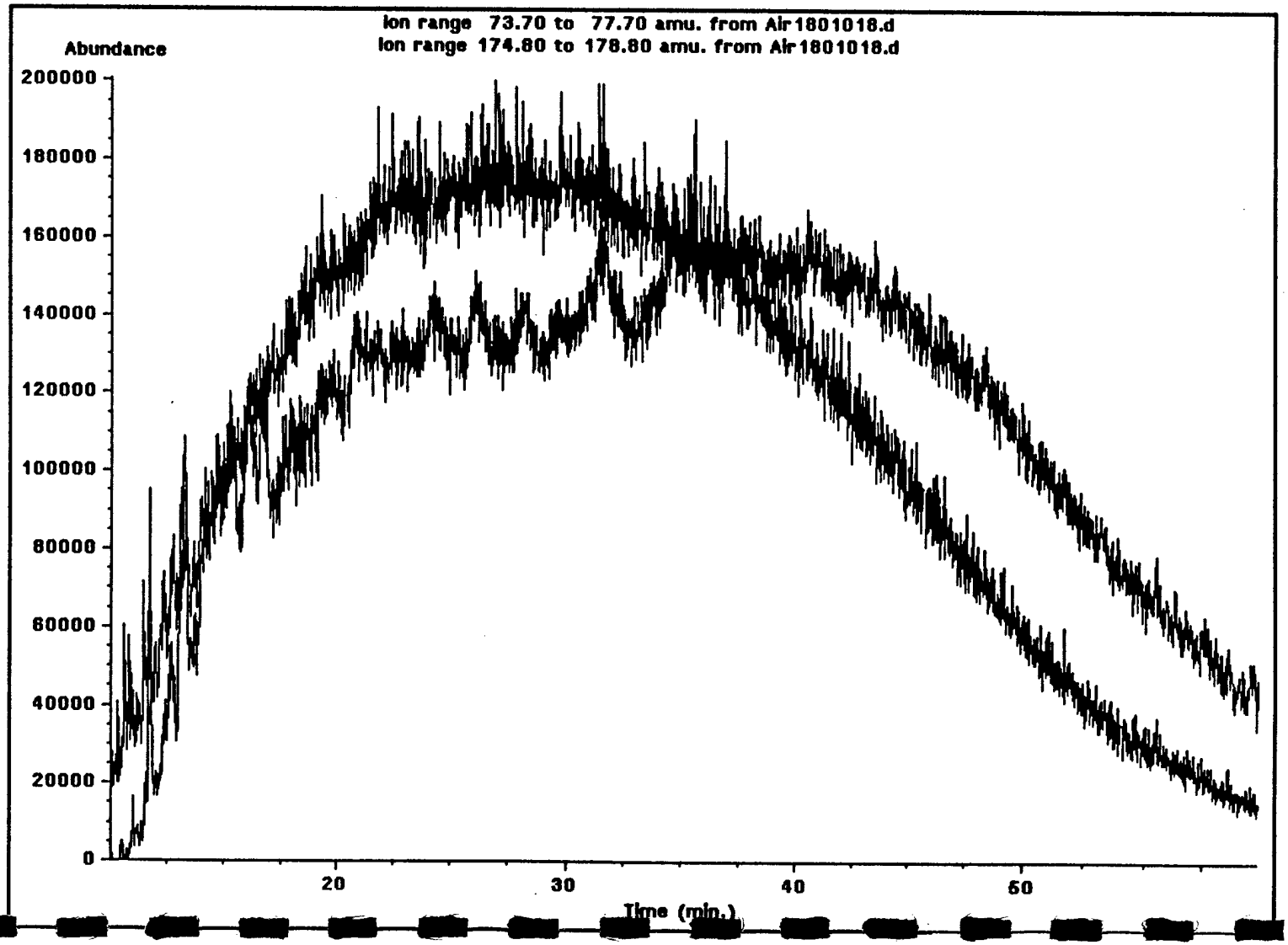


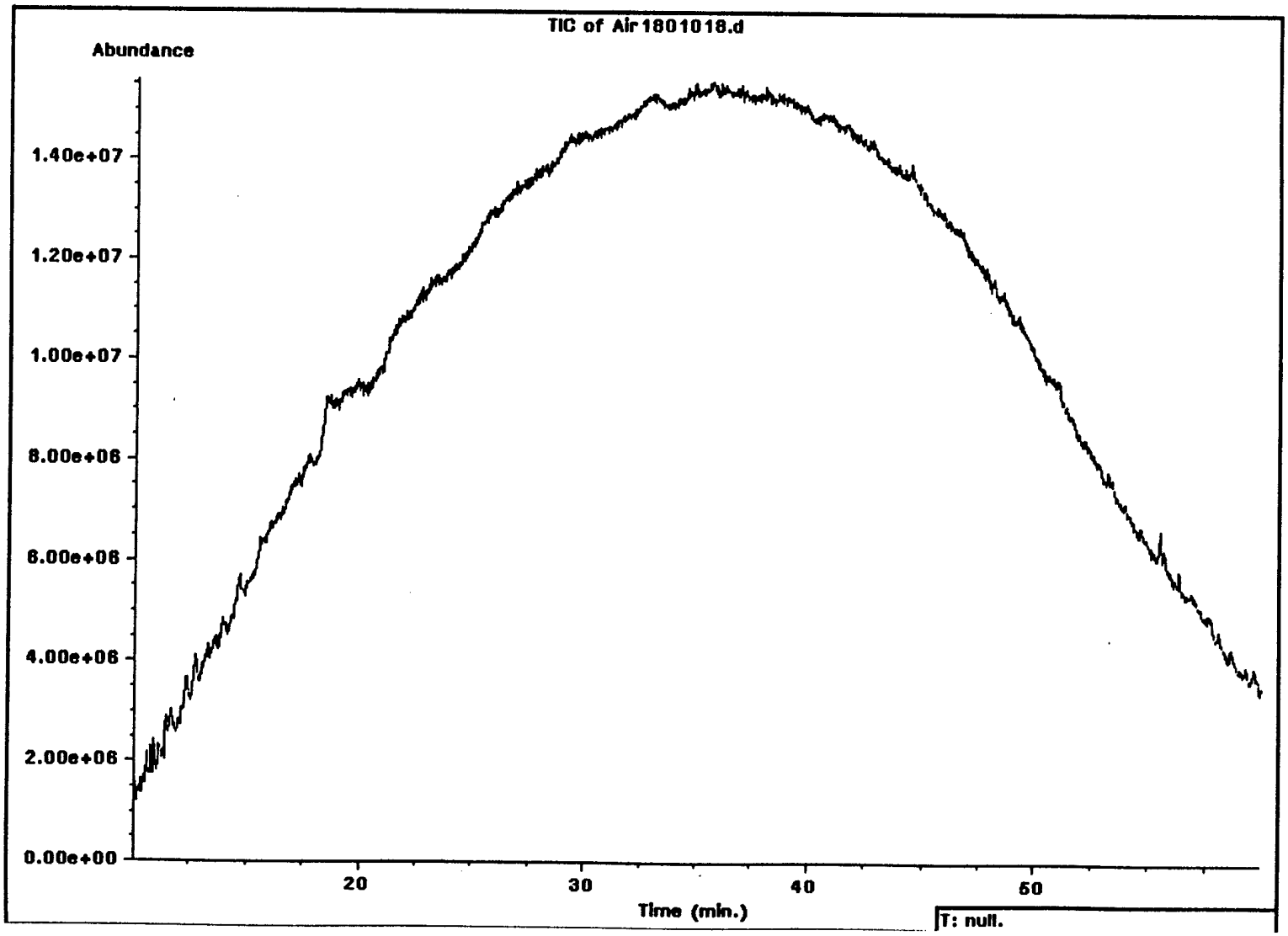


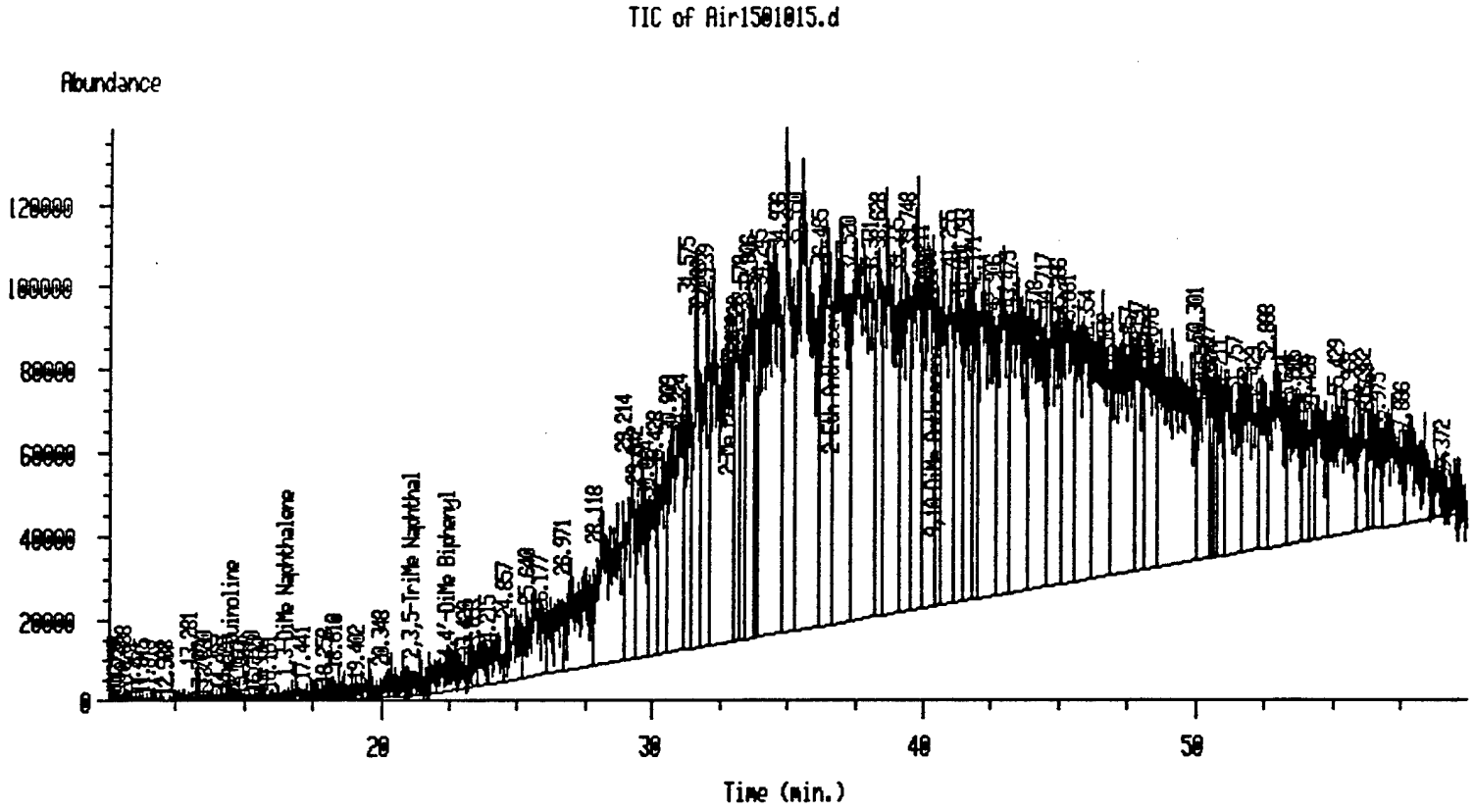

Scan 2445 (33.982 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
51
63
95
115
126
150
165
92
#31346: Phenanthrene, 2-methyl- SCALED
Abundance
8000
4000
0
96
152
165
92
0
20
40
60
80
100
120
140
160
180
Mass/Charge




Ion 212.10 amu. from Air1801018.d
Abundance
40000
30000
20000
10000
0
20
30
40
50
Time (min.)
T: null.






TIC of Air1501015.d
Abundance
120000
100000
80000
60000
40000
20000
0
20
30
40
50
Time (min.)
2,3,5-TriMe Naphthal
4,4'-DiMe Biphenyl
2-Eth Anthrac
4,10-DiMe Anthrac

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1501015.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 09:50:46 PM
Sample Name: Sample 12
Misc Info:
Sequence Index: 1 **Bottle Number:** 15 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

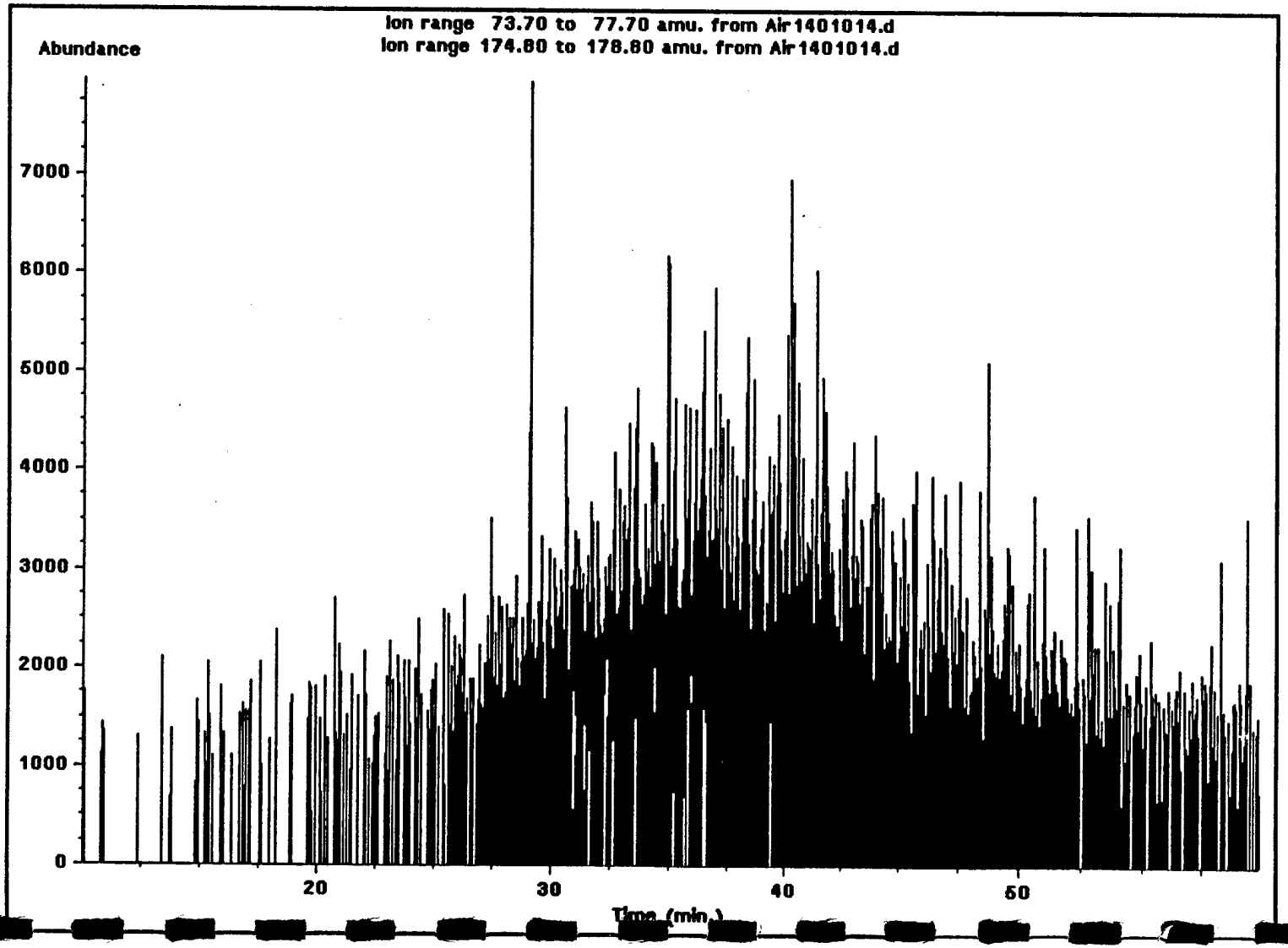
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

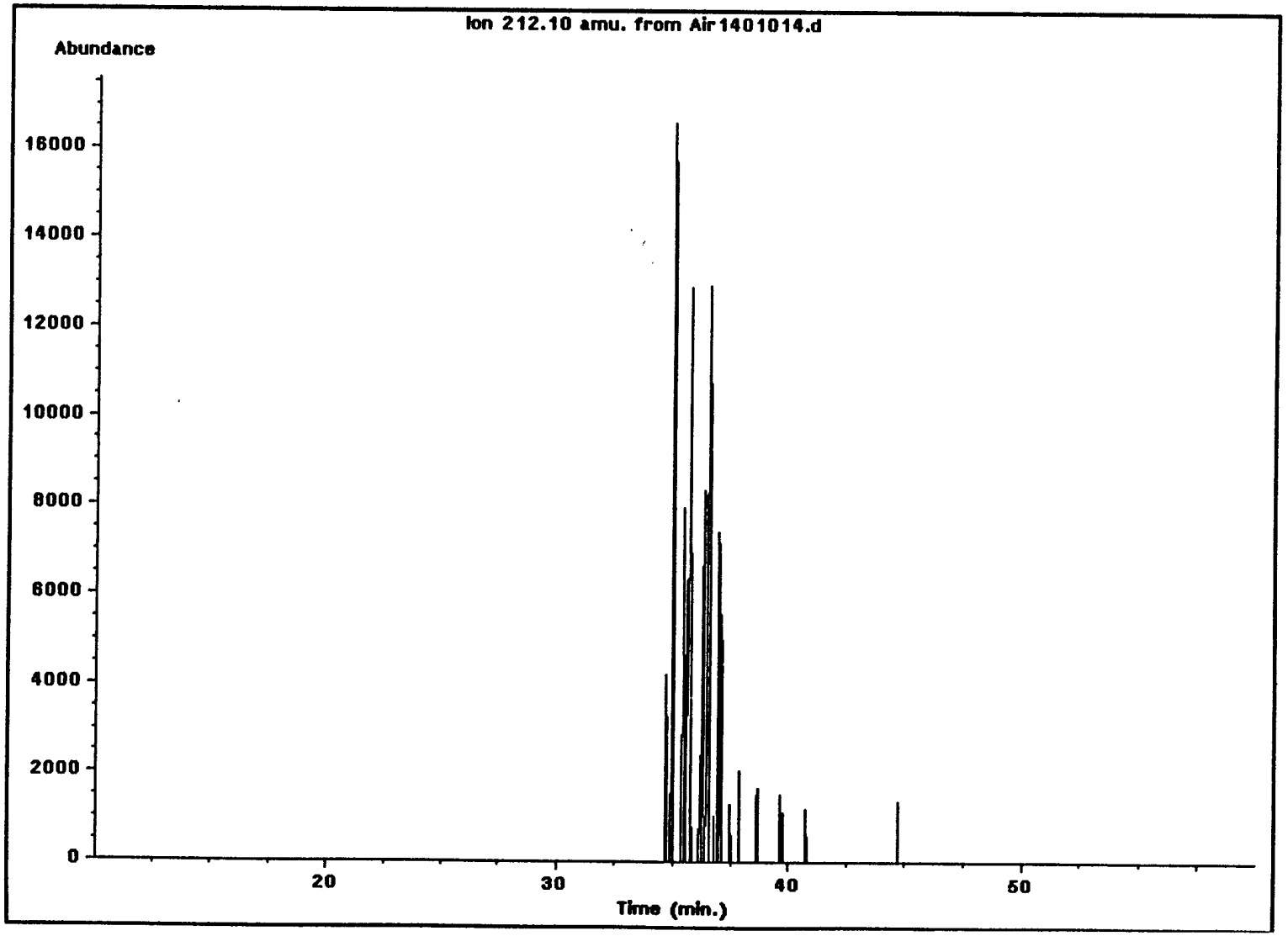
Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

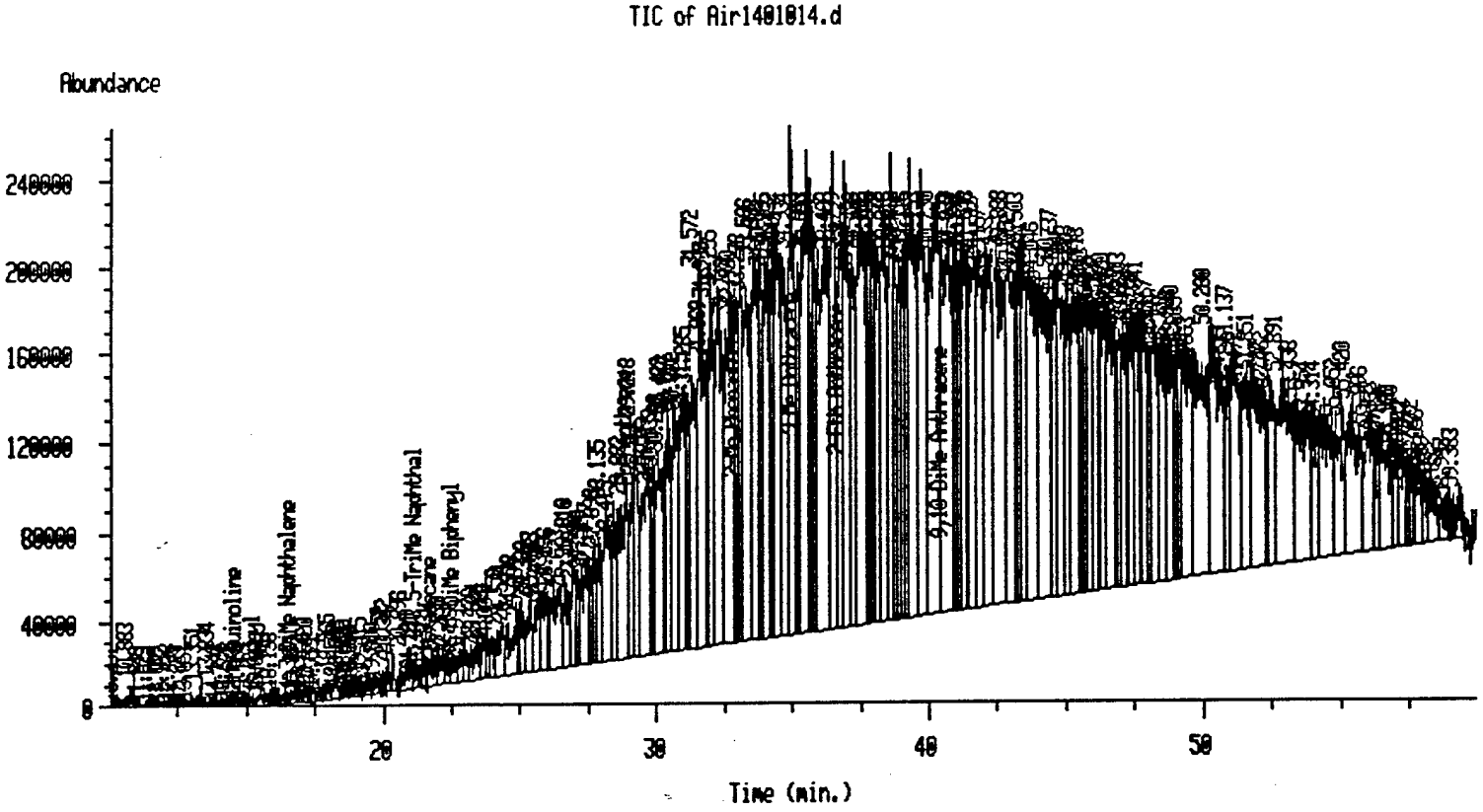
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount	
1		-	Total Ion	2-Me Quinoline	-Not Found-		
2	VH	14.793	Total Ion	6-Me Quinoline	135753		
3		-	Total Ion	Biphenyl	-Not Found-		
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-		
5	PV	16.842	Total Ion	1,3-DiMe Naphthalene	514095		
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-		
7	VV	21.423	Total Ion	2,3,5-TriMe Naphthal	2053799	0.08910	ng/ul
8		-	Total Ion	Hexadecane	-Not Found-		
9		-	Total Ion	Fluorene	-Not Found-		
10	PV	22.731	Total Ion	4,4'-DiMe Biphenyl	4295961	0.4610	ng/ul
11		-	Total Ion	1-Me Fluorene	-Not Found-		
12		-	Total Ion	Phenanthrene	-Not Found-		
13		-	Total Ion	Anthracene	-Not Found-		
14	VV	33.081	Total Ion	2-Me Phenanthrene	10873682	1.542	ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-		
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-		
17	VV	36.919	Total Ion	2-Eth Anthracene	32146770	5.271	ng/ul
18	VV	40.719	Total Ion	9,10-DiMe Anthracene	19909357	3.846	ng/ul

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***






TIC of Air1401014.d
Abundance
240000
200000
160000
120000
80000
40000
0
Naphthalene
2-Me Naphthal
1-Me Naphthal
2,3,5-TriMe Naphthal
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
9,10-DiMe Anthracene
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1401014.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 08:43:21 PM
Sample Name: Sample 11
Misc Info:
Sequence Index: 1 **Bottle Number:** 14 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

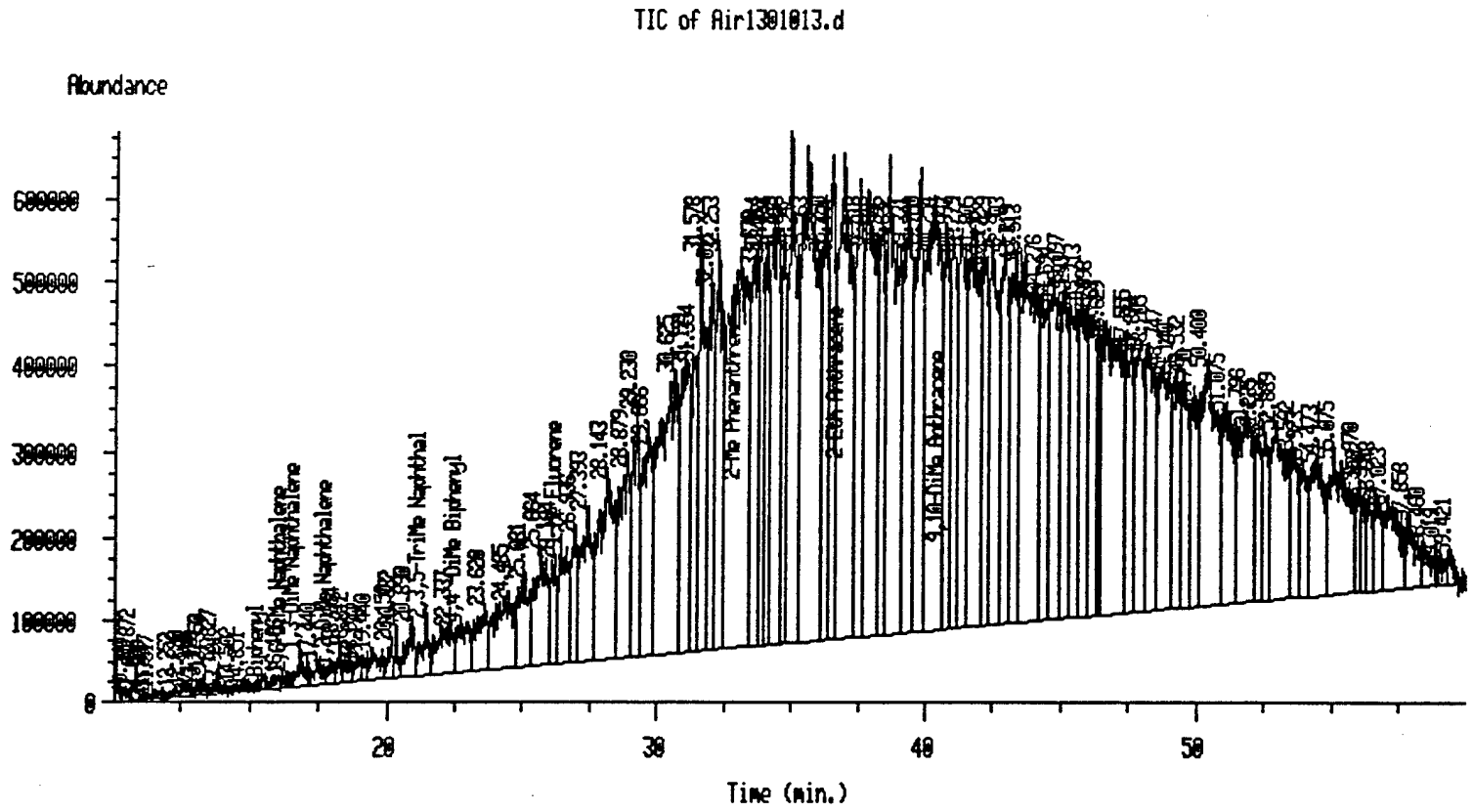
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2	VV	14.790	Total Ion	6-Me Quinoline	286141	
3	VV	15.497	Total Ion	Biphenyl	815376	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5	PV	16.828	Total Ion	1,3-DiMe Naphthalene	1049889	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7	VV	21.420	Total Ion	2,3,5-TriMe Naphthal	1444217	
8	VV	21.972	Total Ion	Hexadecane	1695533	0.2194 ng/ul
9		-	Total Ion	Fluorene	-Not Found-	
10	VV	22.753	Total Ion	4,4'-DiMe Biphenyl	1329757	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VV	29.074	Total Ion	Phenanthrene	7523668	0.9550 ng/ul
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.072	Total Ion	2-Me Phenanthrene	15547519	2.361 ng/ul
15	VV	35.194	Total Ion	9-Me Anthracene	11428474	1.670 ng/ul
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.922	Total Ion	2-Eth Anthracene	23929794	3.840 ng/ul
18	VV	40.722	Total Ion	9,10-DiMe Anthracene	41605115	8.336 ng/ul

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***


TIC of Air1301013.d
Abundance
600000
500000
400000
300000
200000
100000
0
20
30
40
50
Time (min.)
2-Me Phenanthrene
2-Eth Anthracene
9,10-Diffe Anthracene
2,3,5-Trifle Naphthal
Diffe Biphenyl
Naphthalene
Fluorene

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1301013.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 07:35:58 PM
Sample Name: Sample 10
Misc Info:
Sequence Index: 1 **Bottle Number:** 13 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

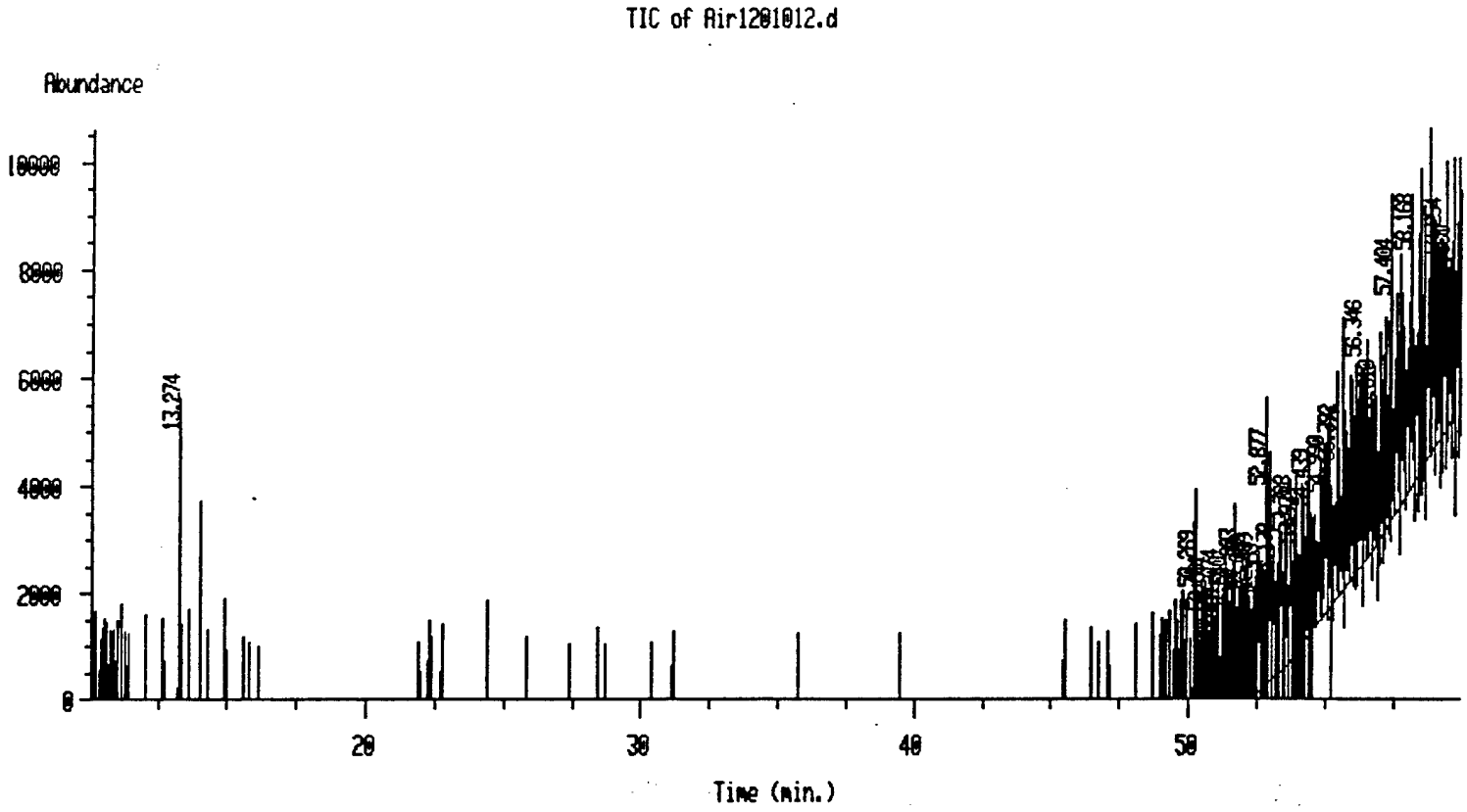
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount	
1		-	Total Ion	2-Me Quinoline	-Not Found-		
2		-	Total Ion	6-Me Quinoline	-Not Found-		
3	VV	15.506	Total Ion	Biphenyl	3288090	0.1935	ng/ul
4	VV	16.352	Total Ion	2,6-DiMe Naphthalene	991482		
5	VV	16.830	Total Ion	1,3-DiMe Naphthalene	7401729	0.9269	ng/ul
6	VV	17.995	Total Ion	1,2-DiMe Naphthalene	3354631	0.2572	ng/ul
7	VV	21.426	Total Ion	2,3,5-TriMe Naphthal	12211989	1.812	ng/ul
8		-	Total Ion	Hexadecane	-Not Found-		
9		-	Total Ion	Fluorene	-Not Found-		
10	VV	22.732	Total Ion	4,4'-DiMe Biphenyl	16187392	2.519	ng/ul
11	VV	26.416	Total Ion	1-Me Fluorene	32340216	5.606	ng/ul
12		-	Total Ion	Phenanthrene	-Not Found-		
13		-	Total Ion	Anthracene	-Not Found-		
14	VV	33.077	Total Ion	2-Me Phenanthrene	225777534	39.21	ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-		
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-		
17	VV	36.921	Total Ion	2-Eth Anthracene	198404003	34.23	ng/ul
18	VV	40.723	Total Ion	9,10-DiMe Anthracene	69975960	14.21	ng/ul

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***


TIC of Air1201012.d
Abundance
10000
8000
6000
4000
2000
0
13.274
52.877
56.346
57.404
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1201012.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 06:28:34 PM
Sample Name: Sample 9
Misc Info:
Sequence Index: 1 **Bottle Number:** 12 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

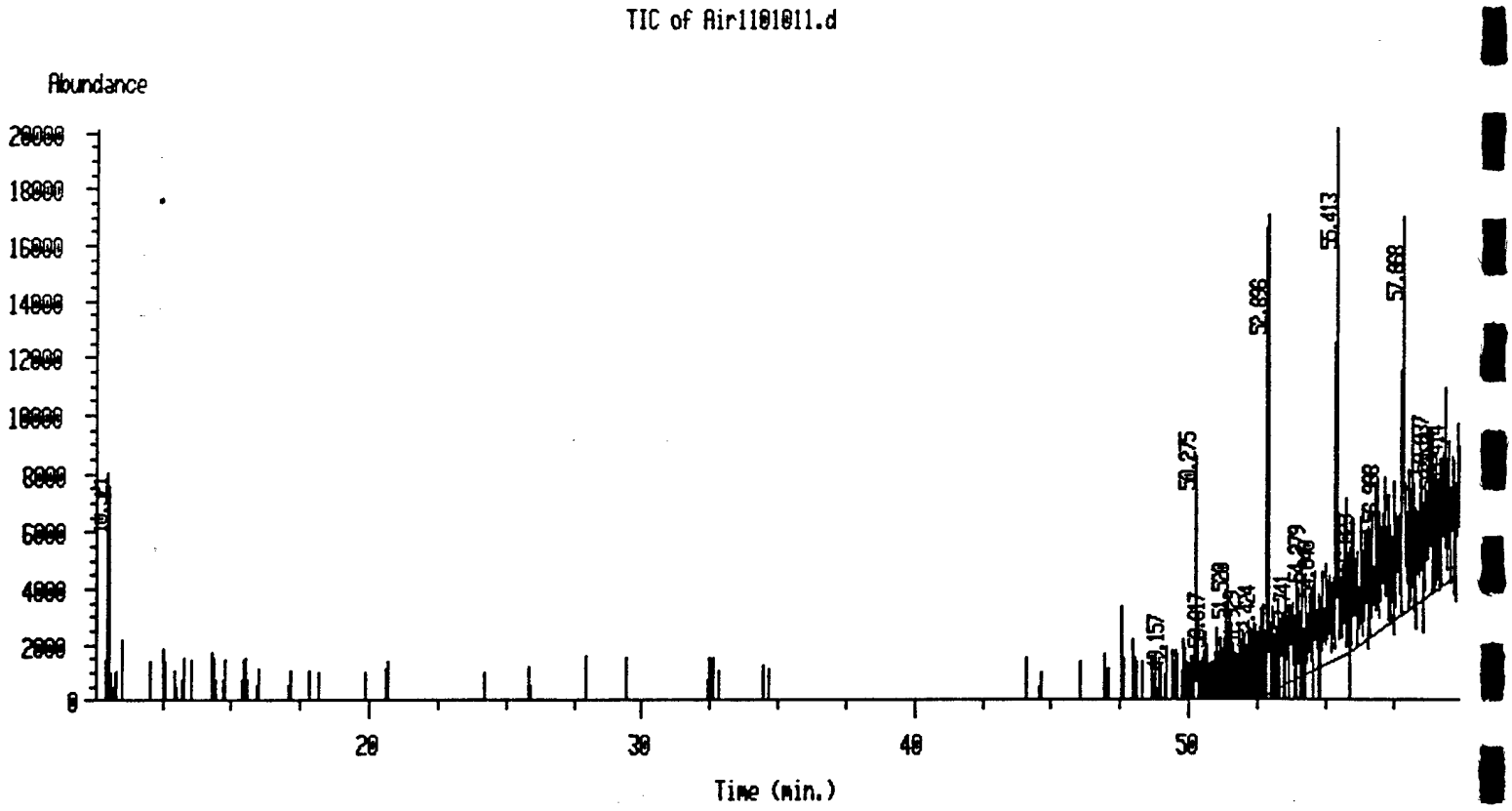
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***


TIC of Air1101011.d
Abundance
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
20
30
40
50
Time (min.)
55.413
52.896
57.868
50.275

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1101011.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 05:21:18 PM
Sample Name: Sample 8
Misc Info:
Sequence Index: 1 **Bottle Number:** 11 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

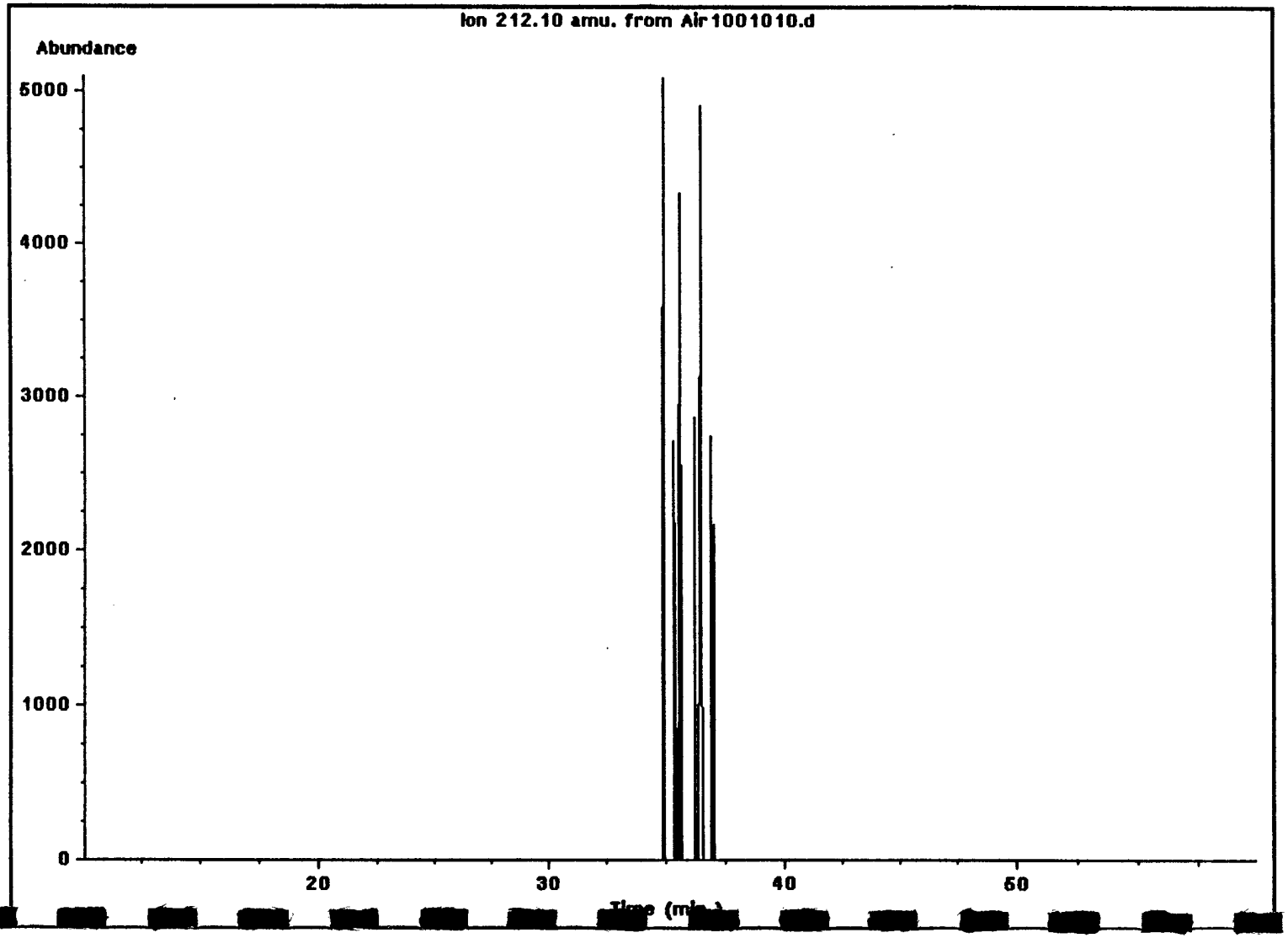
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

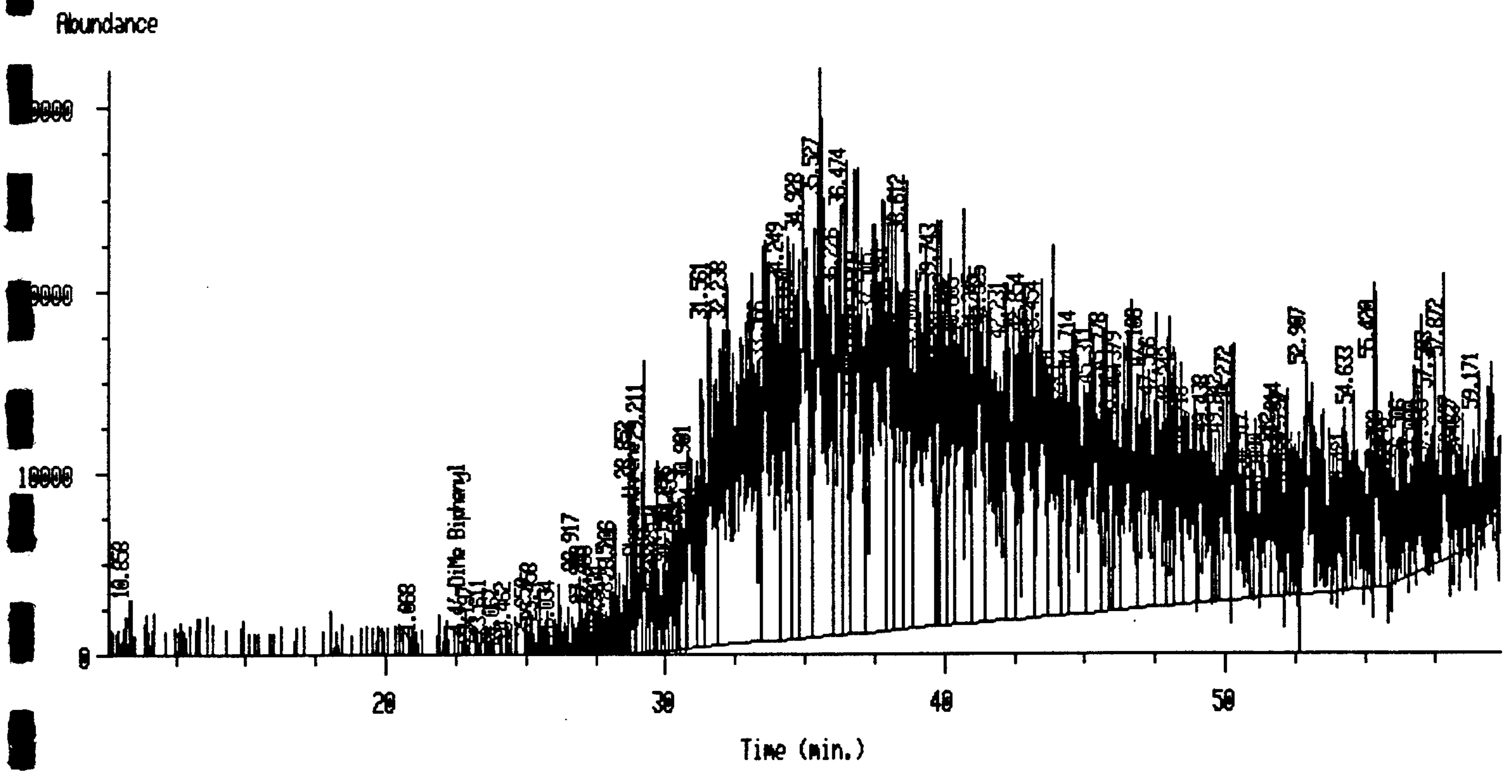
Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***



TIC of Air1001010.d



External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1001010.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 04:18:52 PM
Sample Name: Sample 7
Misc Info:
Sequence Index: 1 **Bottle Number:** 10 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

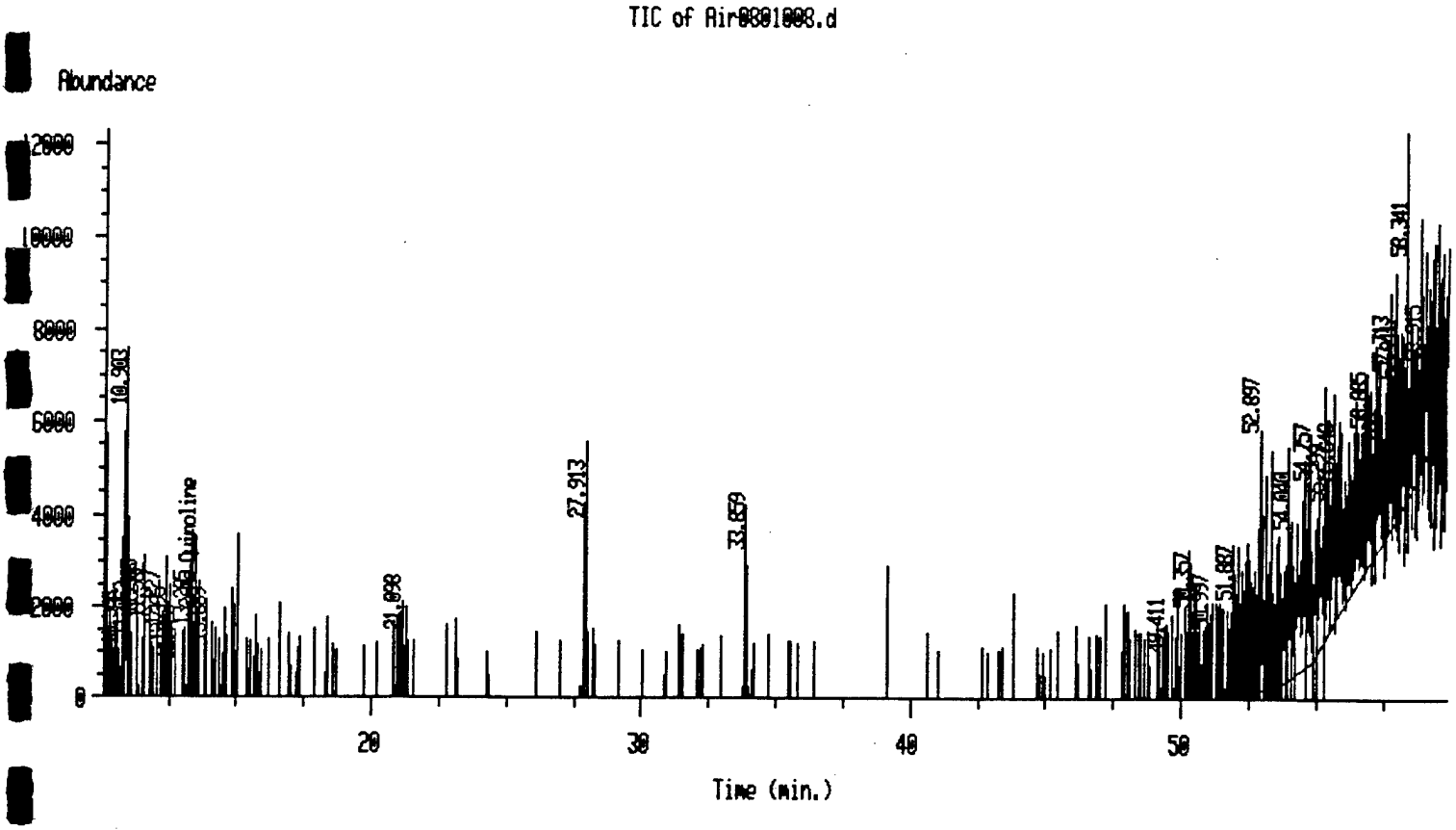
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10	BH	22.856	Total Ion	4,4'-DiMe Biphenyl	45226	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VV	29.088	Total Ion	Phenanthrene	386973	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.903	Total Ion	2-Eth Anthracene	4765229	0.5020 ng/ul
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***


TIC of Air0001003.d
Abundance
12000
10000
8000
6000
4000
2000
0
10.903
Quinoline
21.098
27.913
33.859
51.892
52.897
58.341
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0801008.d
Operator:
Date Acquired: Wed Nov 08 95 02:04:43 PM
Sample Name: Sample 6
Misc Info:
Bottle Number: 8 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

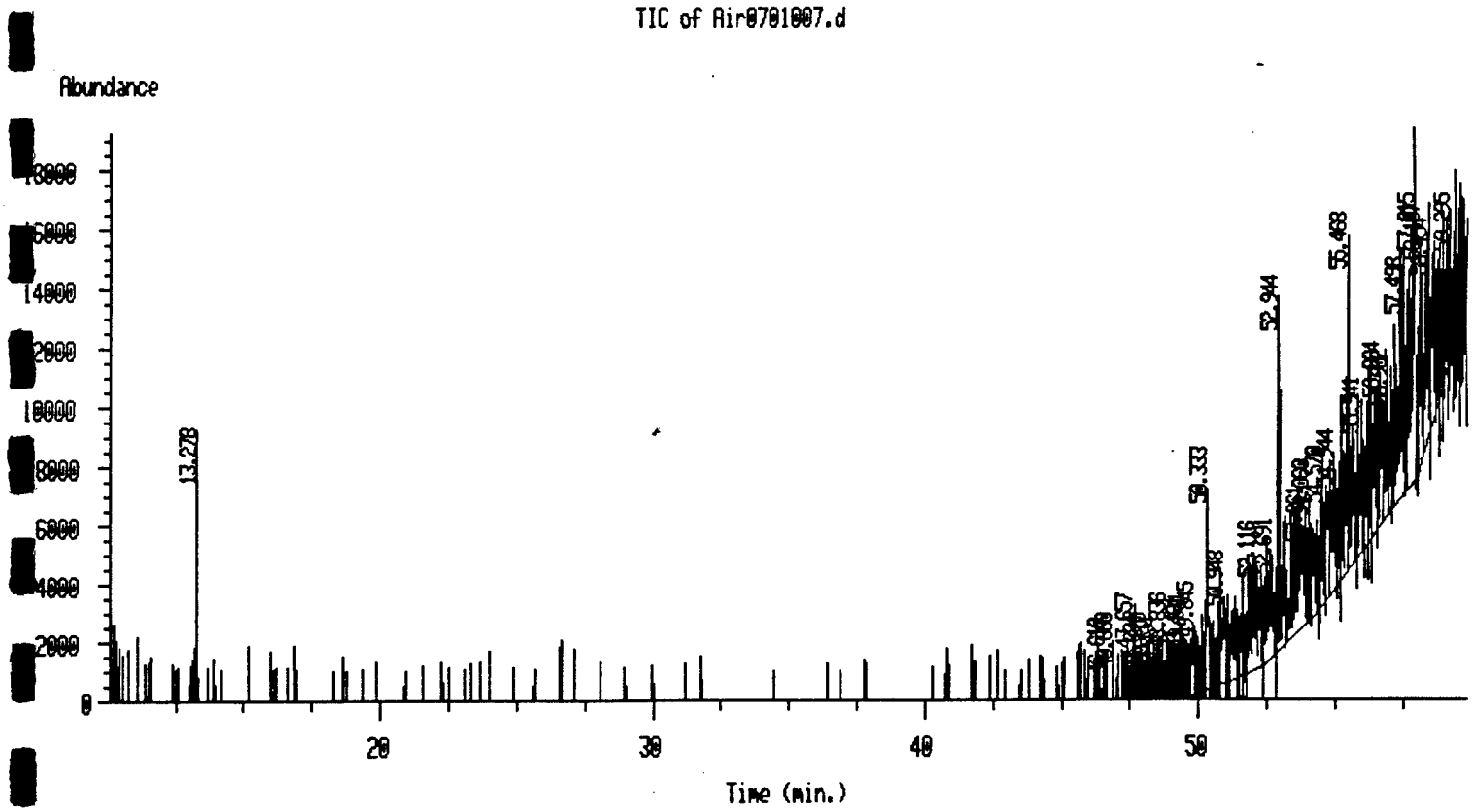
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	PH	13.488	Total Ion	2-Me Quinoline	62457	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***


TIC of Air0701007.d
Abundance
16000
14000
12000
10000
8000
6000
4000
2000
0
13.278
50.333
52.944
55.468
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0701007.d
Operator: Tim E. Spurgeon
Date Acquired: Tue Nov 07 95 11:24:57 PM
Sample Name: Sample 5
Misc Info:
Bottle Number: 7 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

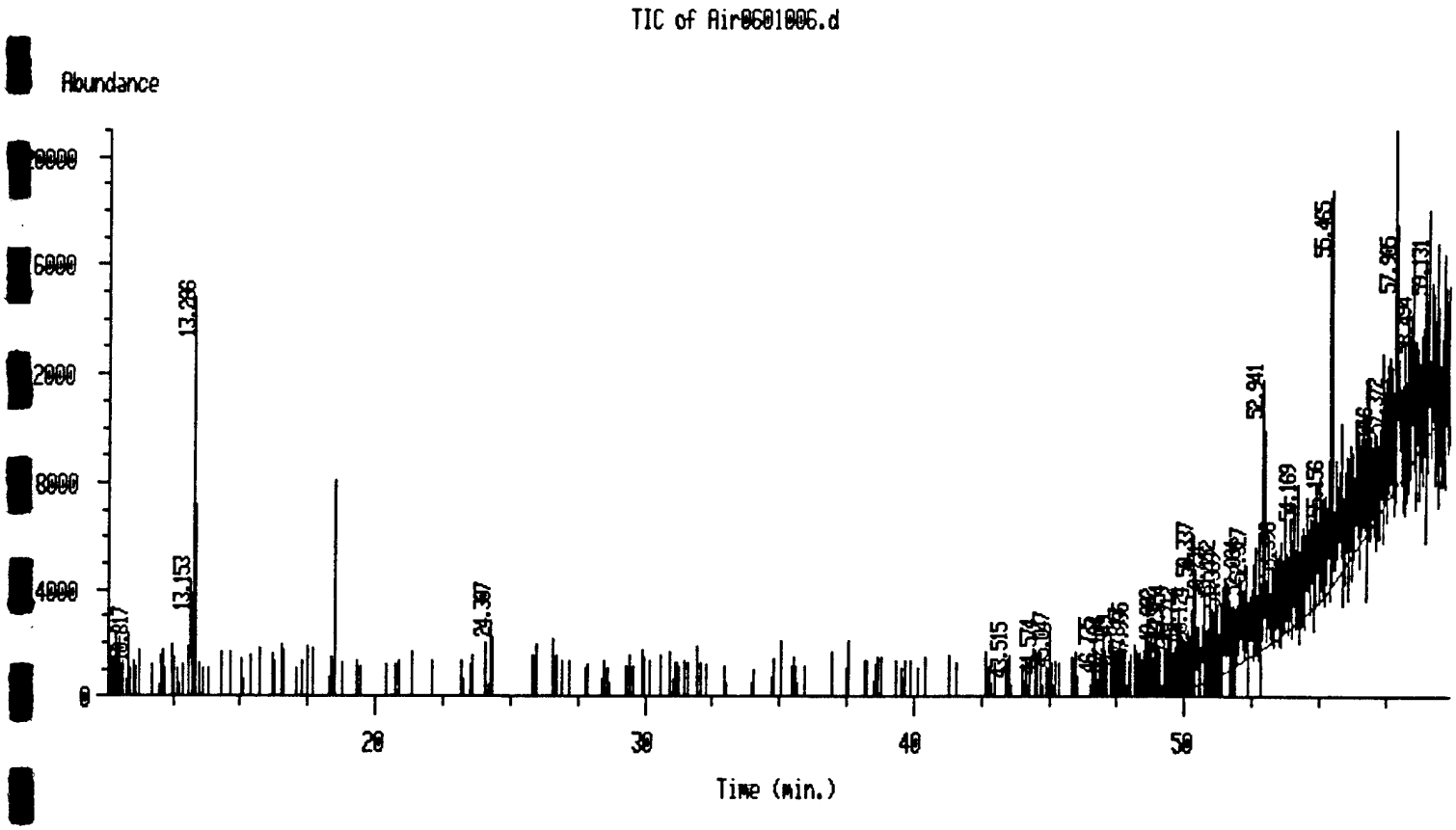
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***


TIC of Air0601006.d
Abundance
8000
6000
4000
2000
0
13.286
13.153
24.397
52.941
55.465
57.985
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0601006.d
Operator: Tim E. Spurgeon
Date Acquired: Tue Nov 07 95 10:20:48 PM
Sample Name: Sample 4
Misc Info:
Bottle Number: 6 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

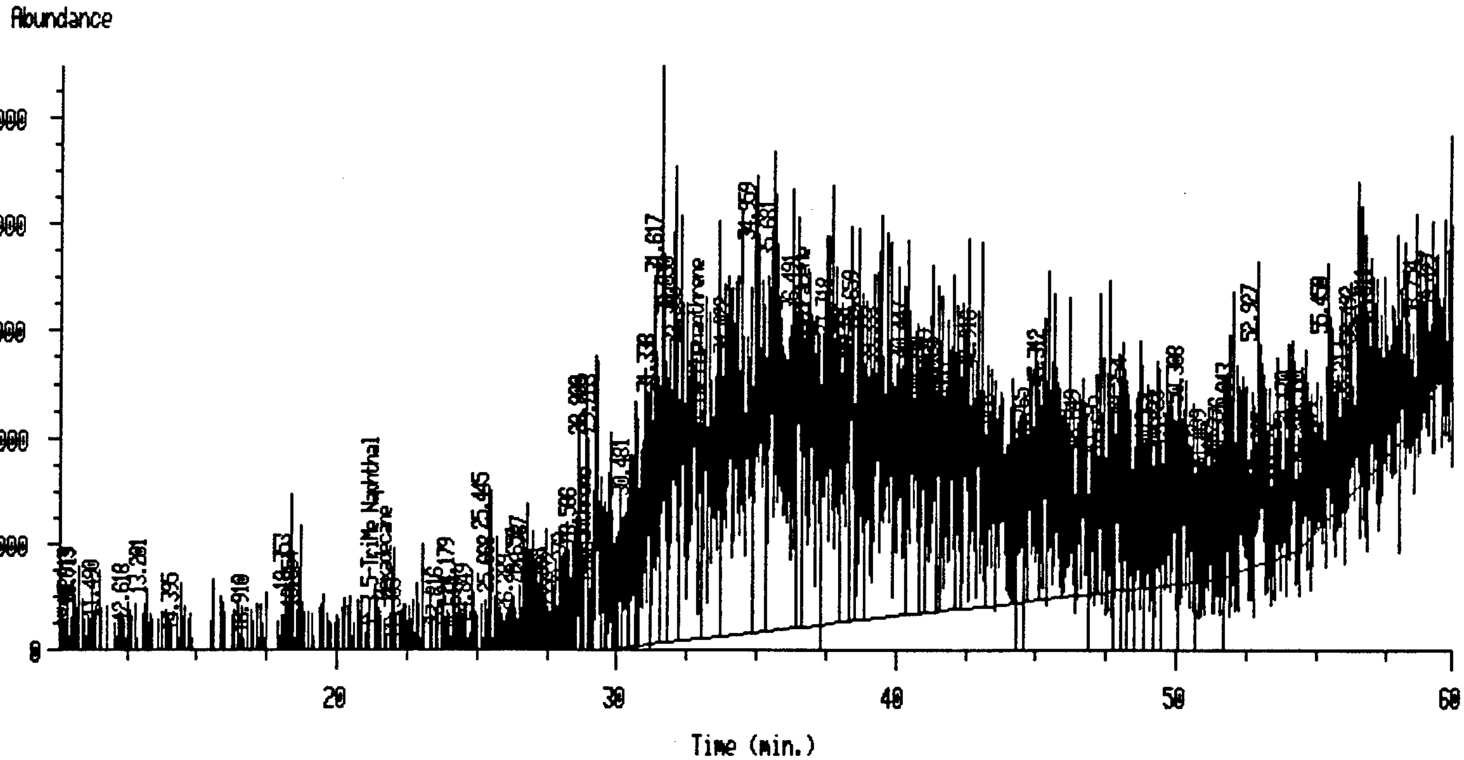
Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***

TIC of Air0501005.d



External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0501005.d
Operator: Kelly Davis
Date Acquired: Tue Nov 07 95 09:04:51 PM
Sample Name: Sample 3
Misc Info:
Sequence Index: 1 **Bottle Number:** 5 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

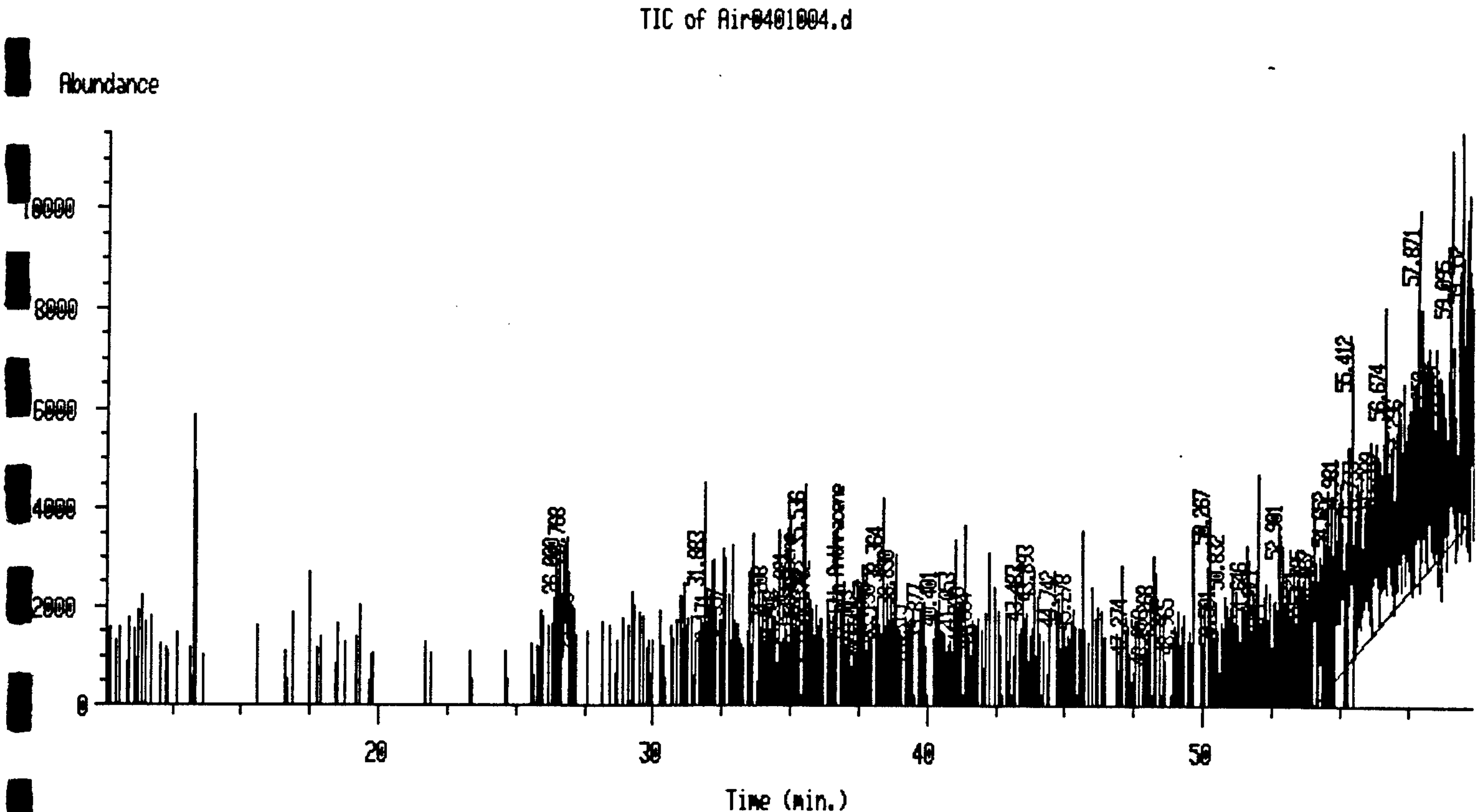
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7	PH	21.487	Total Ion	2,3,5-TriMe Naphthal	101435	
8	PH	21.988	Total Ion	Hexadecane	63197	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VH	29.097	Total Ion	Phenanthrene	139966	
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.136	Total Ion	2-Me Phenanthrene	3011993	0.1639 ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.884	Total Ion	2-Eth Anthracene	3358759	0.2571 ng/ul
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***


TIC of Air0401004.d
Abundance
10000
8000
6000
4000
2000
0
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0401004.d
Operator: Kelly Davis
Date Acquired: Tue Nov 07 95 04:10:17 PM
Sample Name: Sample 2
Misc Info:
Sequence Index: 1 **Bottle Number:** 4 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

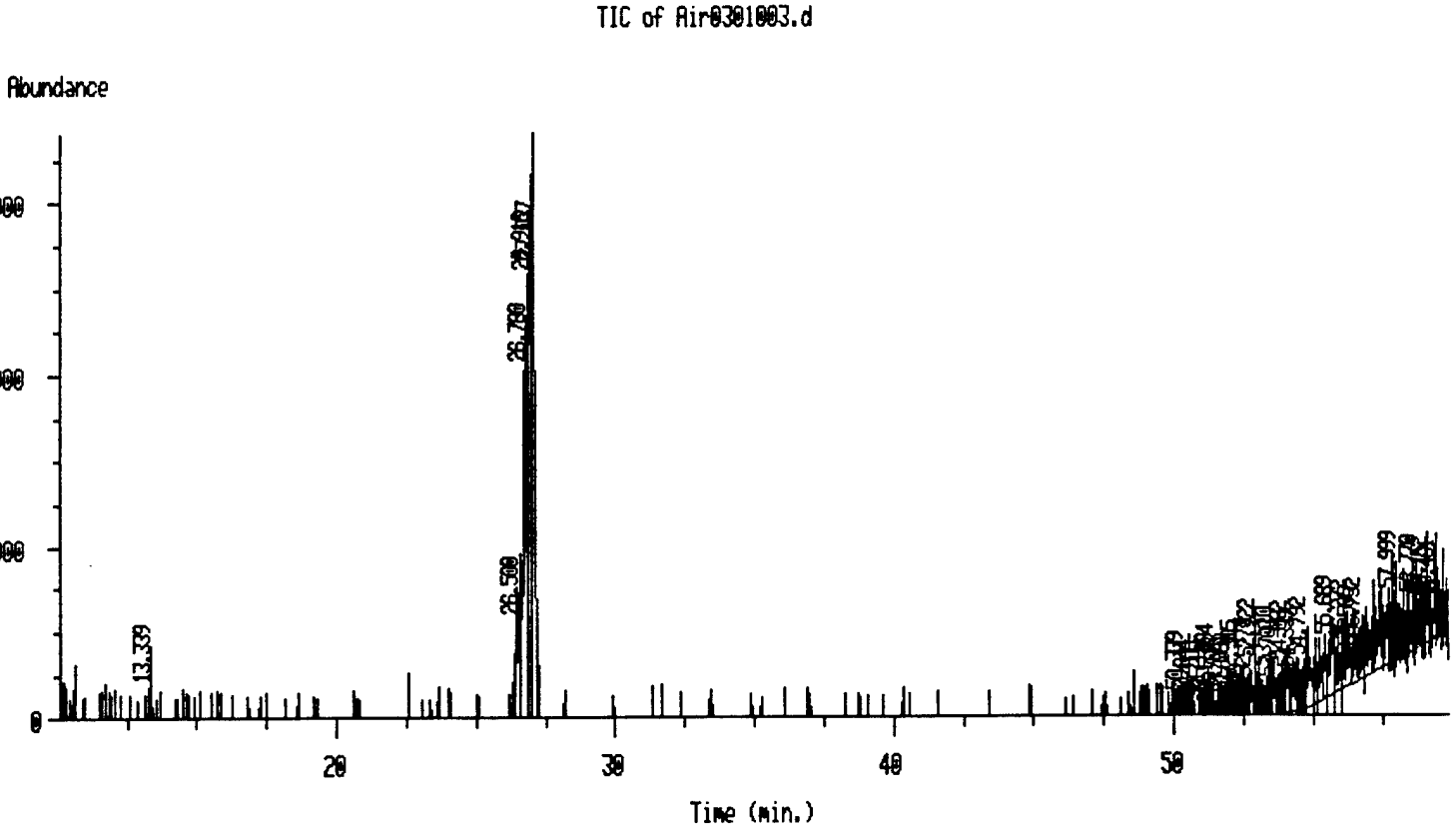
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15	PH	35.184	Total Ion	9-Me Anthracene	25572	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	BH	36.954	Total Ion	2-Eth Anthracene	82457	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***


TIC of Air0301003.d
Abundance
30000
10000
0
13.339
26.500
26.788
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0301003.d
Operator: Kelly Davis
Date Acquired: Tue Nov 07 95 03:06:47 PM
Sample Name: Sample 1
Misc Info:
Sequence Index: 1 **Bottle Number:** 3 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

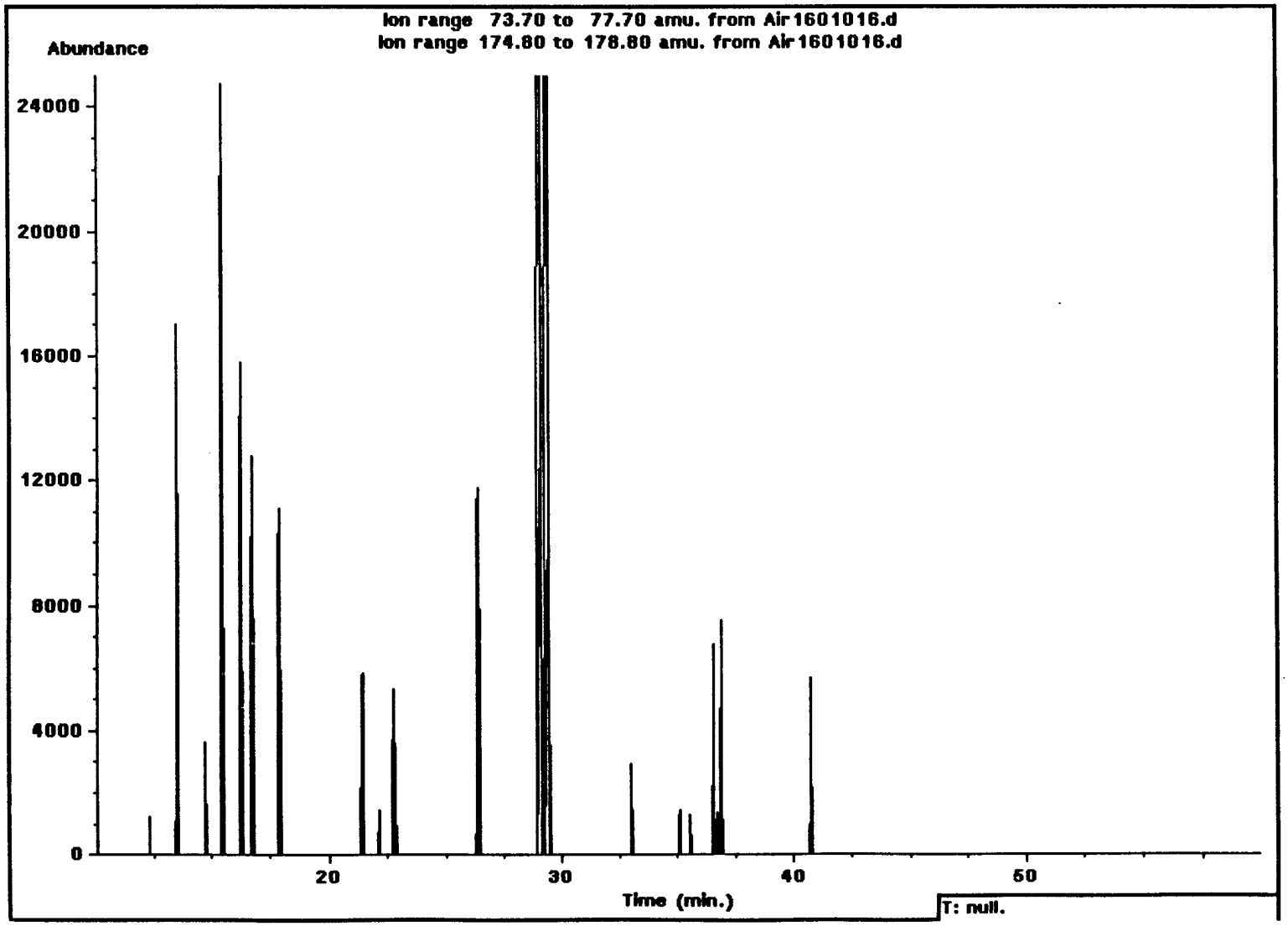
Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

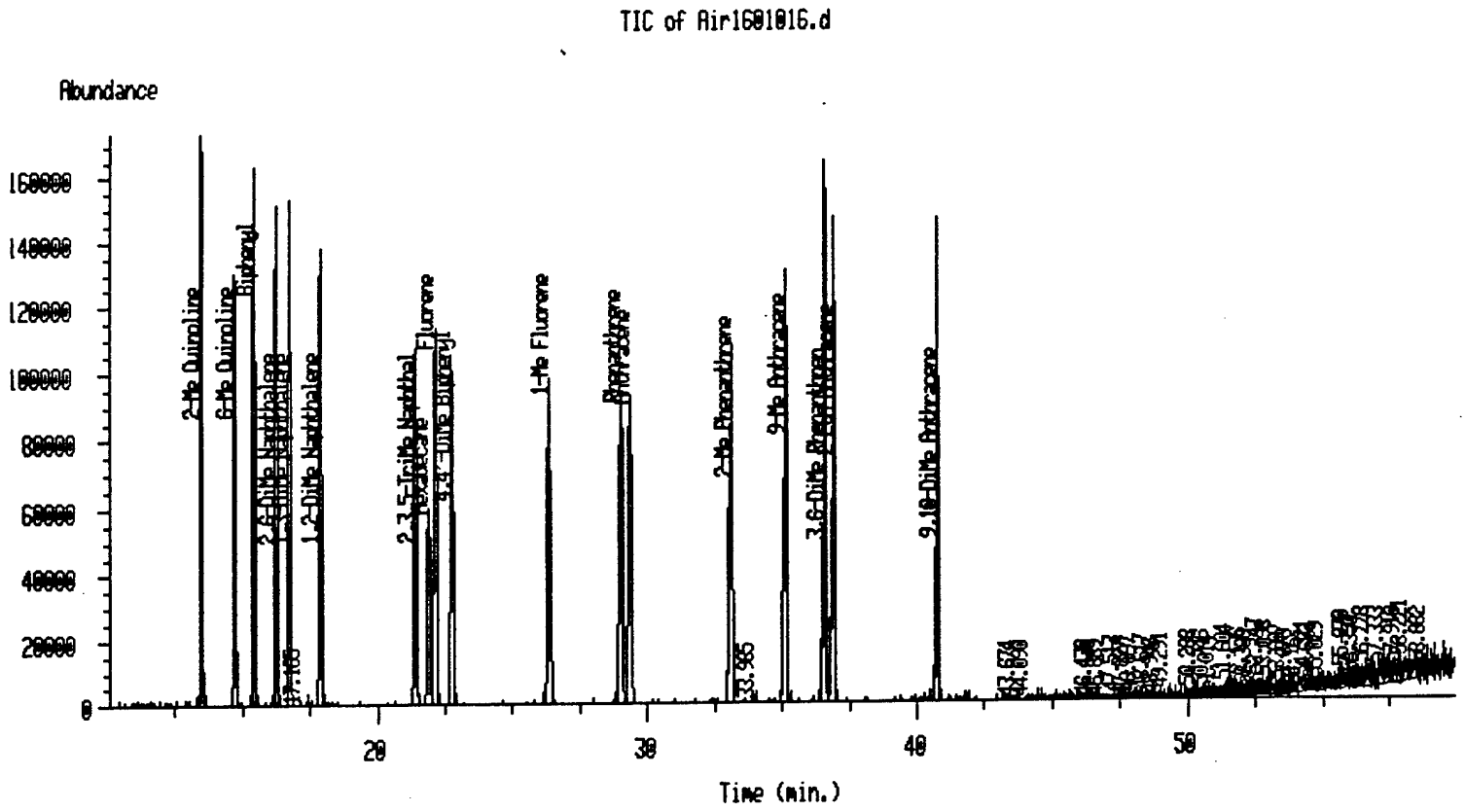
Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

***** REPORT ERRORS *****

*** Not All Calibrated Peaks Found ***




TIC of Air1601016.d
Abundance
160000
140000
120000
100000
80000
60000
40000
20000
0
2-Me Quinoline
6-Me Quinoline
Biphenyl
2,6-DiMe Naphthalene
1,2-DiMe Naphthalene
2,3,5-TriMe Naphthal
Fluorene
1-Me Fluorene
Phenanthrene
2-Me Phenanthrene
9-Me Anthracene
3,6-DiMe Phenanthren
9,10-DiMe Anthracene
20
30
40
50
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air1601016.d
Operator: Kelly Davis
Date Acquired: Wed Nov 08 95 10:58:03 PM
Sample Name: 1 ug/mL PAH's
Misc Info:
Sequence Index: 1 **Bottle Number:** 16 **Repetition Number:** 1

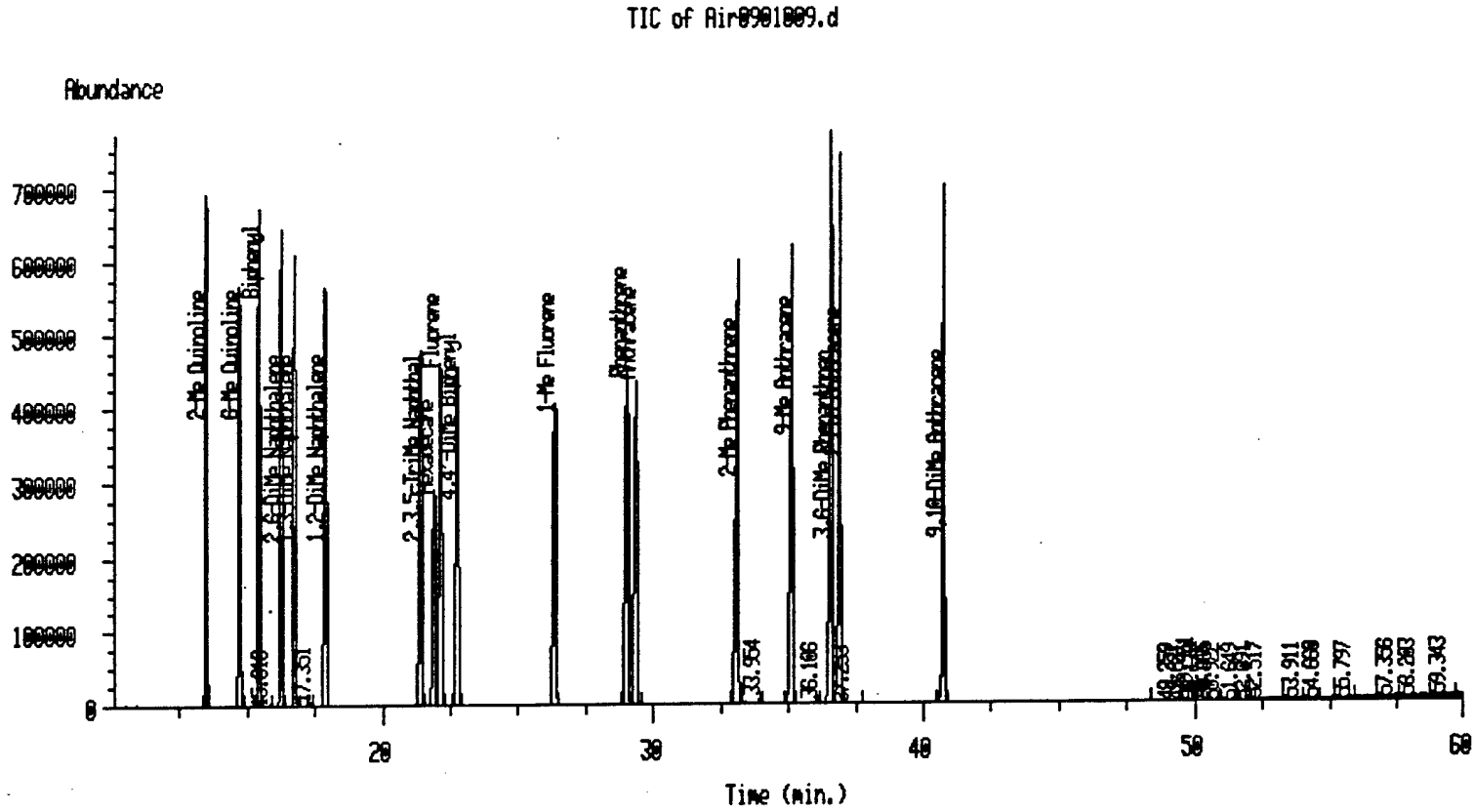
Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	BH	13.472	Total Ion	2-Me Quinoline	6275026	1.085 ng/ul
2	BH	14.699	Total Ion	6-Me Quinoline	6045579	1.082 ng/ul
3	BH	15.416	Total Ion	Biphenyl	8690902	1.152 ng/ul
4	PH	16.235	Total Ion	2,6-DiMe Naphthalene	8329952	1.098 ng/ul
5	PH	16.731	Total Ion	1,3-DiMe Naphthalene	8468326	1.113 ng/ul
6	BH	17.867	Total Ion	1,2-DiMe Naphthalene	8050029	1.090 ng/ul
7	BH	21.378	Total Ion	2,3,5-TriMe Naphthal	7767064	1.058 ng/ul
8	PH	21.862	Total Ion	Hexadecane	4800835	1.072 ng/ul
9	PH	22.122	Total Ion	Fluorene	8068735	1.127 ng/ul
10	BH	22.736	Total Ion	4,4'-DiMe Biphenyl	7858848	1.078 ng/ul
11	BH	26.337	Total Ion	1-Me Fluorene	7597842	1.086 ng/ul
12	BH	29.016	Total Ion	Phenanthrene	8044782	1.041 ng/ul
13	PH	29.343	Total Ion	Anthracene	7785419	1.070 ng/ul
14	BH	33.120	Total Ion	2-Me Phenanthrene	8289202	1.089 ng/ul
15	BH	35.135	Total Ion	9-Me Anthracene	8341067	1.116 ng/ul
16	BH	36.590	Total Ion	3,6-DiMe Phenanthren	8799042	1.077 ng/ul
17	PH	36.915	Total Ion	2-Eth Anthracene	8001117	1.066 ng/ul
18	BH	40.754	Total Ion	9,10-DiMe Anthracene	6464744	1.064 ng/ul


TIC of Air8901009.d
Abundance
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
2-Me Quinoline
6-Me Quinoline
Biphenyl
2,6-Dimethylnaphthalene
2,3-Dimethylnaphthalene
1,2-Dimethylnaphthalene
2,3,5-Trimethylnaphthalene
Fluorene
4,4'-Dimethylbiphenyl
1-Me Fluorene
Phenanthrene
Anthracene
2-Me Phenanthrene
9-Me Anthracene
3,6-Dimethylphenanthrene
9,10-Dimethylanthracene
33.954
36.186
53.911
54.888
55.797
57.356
58.283
59.343
20
30
40
50
60
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0901009.d
Operator:
Date Acquired: Wed Nov 08 95 03:08:54 PM
Sample Name: 5 ug/mL PAH's
Misc Info:
Bottle Number: 9 **Repetition Number:** 1

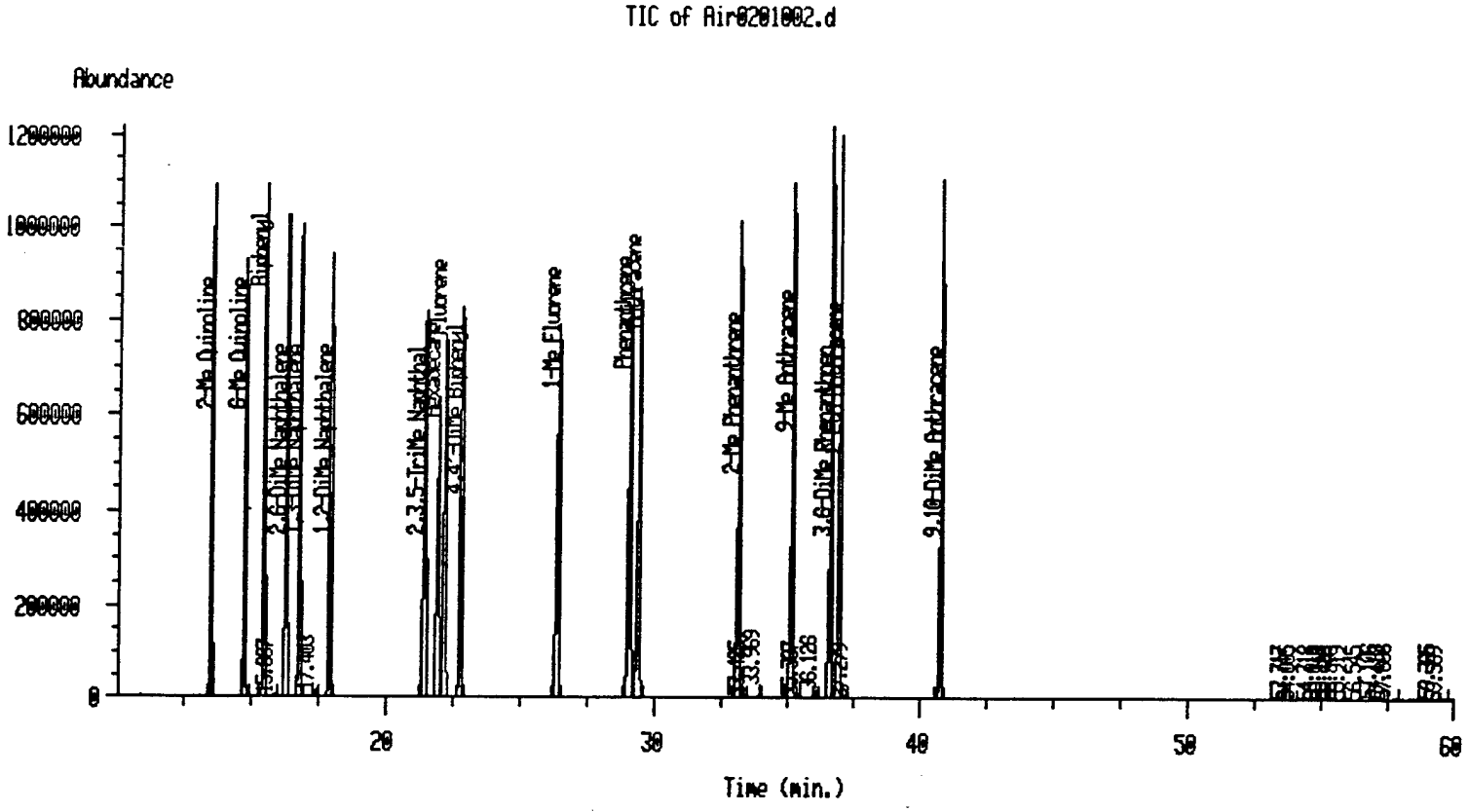
Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	BH	13.473	Total Ion	2-Me Quinoline	27651933	5.844 ng/ul
2	BH	14.697	Total Ion	6-Me Quinoline	26817396	5.684 ng/ul
3	BH	15.416	Total Ion	Biphenyl	35299679	5.874 ng/ul
4	PH	16.234	Total Ion	2,6-DiMe Naphthalene	35693094	5.910 ng/ul
5	PH	16.727	Total Ion	1,3-DiMe Naphthalene	36092132	5.931 ng/ul
6	PH	17.868	Total Ion	1,2-DiMe Naphthalene	35563337	5.968 ng/ul
7	BH	21.378	Total Ion	2,3,5-TriMe Naphthal	36078888	5.858 ng/ul
8	PH	21.896	Total Ion	Hexadecane	21859178	5.754 ng/ul
9	VH	22.123	Total Ion	Fluorene	33814866	5.852 ng/ul
10	BH	22.735	Total Ion	4,4'-DiMe Biphenyl	35710446	5.899 ng/ul
11	BH	26.346	Total Ion	1-Me Fluorene	34320457	5.968 ng/ul
12	BH	29.019	Total Ion	Phenanthrene	37470690	5.905 ng/ul
13	VH	29.356	Total Ion	Anthracene	35587766	5.979 ng/ul
14	BH	33.106	Total Ion	2-Me Phenanthrene	37537989	6.216 ng/ul
15	BH	35.123	Total Ion	9-Me Anthracene	36724801	6.209 ng/ul
16	PH	36.578	Total Ion	3,6-DiMe Phenanthren	40551423	6.334 ng/ul
17	PH	36.904	Total Ion	2-Eth Anthracene	37497950	6.203 ng/ul
18	BH	40.742	Total Ion	9,10-DiMe Anthracene	30606972	6.060 ng/ul


TIC of Air0201002.d
Abundance
12000000
10000000
8000000
6000000
4000000
2000000
0
2-Me Quinoline
6-Me Quinoline
Biphenyl
2,6-DiMe Naphthalene
1,2-DiMe Naphthalene
2,3,5-TriMe Naphthal
Fluorene
1-Me Fluorene
Phenanthrene
2-Me Phenanthrene
9-Me Anthracene
3,6-DiMe Phenanthren
9,10-DiMe Anthracene
20
30
40
50
60
Time (min.)

External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0201002.d
Operator: Kelly Davis
Date Acquired: Tue Nov 07 95 12:25:36 PM
Sample Name: 10 ug/mL PAH's
Misc Info:
Sequence Index: 1 **Bottle Number:** 2 **Repetition Number:** 1

Fog Oil PAH's

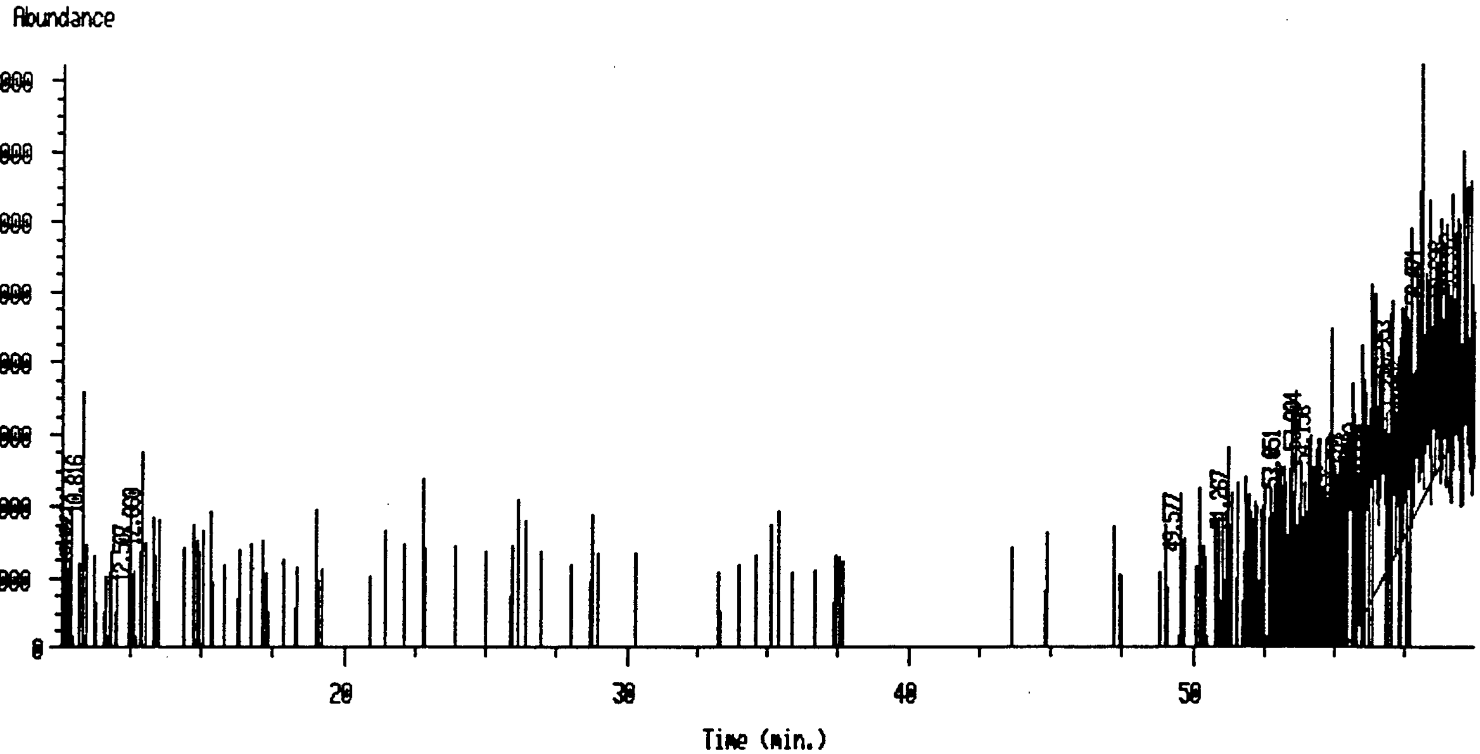
Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1	BH	13.522	Total Ion	2-Me Quinoline	44429406	9.579 ng/ul
2	BH	14.748	Total Ion	6-Me Quinoline	44751531	9.657 ng/ul
3	BH	15.468	Total Ion	Biphenyl	56051390	9.557 ng/ul
4	PH	16.288	Total Ion	2,6-DiMe Naphthalene	56360816	9.544 ng/ul
5	PH	16.784	Total Ion	1,3-DiMe Naphthalene	56743607	9.534 ng/ul
6	PH	17.920	Total Ion	1,2-DiMe Naphthalene	55588808	9.519 ng/ul
7	BH	21.433	Total Ion	2,3,5-TriMe Naphthal	58007231	9.577 ng/ul
8	PH	21.928	Total Ion	Hexadecane	35957870	9.624 ng/ul
9	PH	22.177	Total Ion	Fluorene	54080548	9.572 ng/ul
10	BH	22.789	Total Ion	4,4'-DiMe Biphenyl	56827341	9.555 ng/ul
11	BH	26.399	Total Ion	1-Me Fluorene	53776980	9.523 ng/ul
12	BH	29.064	Total Ion	Phenanthrene	59543396	9.554 ng/ul
13	VH	29.404	Total Ion	Anthracene	55618119	9.516 ng/ul
14	BH	33.139	Total Ion	2-Me Phenanthrene	55697534	9.400 ng/ul
15	BH	35.154	Total Ion	9-Me Anthracene	54516933	9.402 ng/ul
16	PH	36.607	Total Ion	3,6-DiMe Phenanthren	58728112	9.344 ng/ul
17	VH	36.936	Total Ion	2-Eth Anthracene	55904252	9.408 ng/ul
18	BH	40.768	Total Ion	9,10-DiMe Anthracene	47112365	9.476 ng/ul

TIC of Air0101001.d



External Standard Report

Information from Current Data File Header:
File: /chem/msd.i/air/Air0101001.d
Operator: Kelly Davis
Date Acquired: Tue Nov 07 95 11:22:54 AM
Sample Name: Acetone Blank
Misc Info:
Sequence Index: 1 **Bottle Number:** 1 **Repetition Number:** 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Peak Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

Sequence Parameters:

Operator Name: Kelly Davis
Parts of methods to be run: full method
What to do on a barcode mismatch: inject anyway
Data File Prefix: Air
Start Run Counter at: 17
Directory for Data Files: /chem/msd.i/air
Directories for Method Files:
/chem/msd.i

Pre-Sequence Command:
Post-Sequence Command:
Sequence Comment:

Sequence Table:

Seq. Line	Method Name	From Vial	To Vial	Inj/ Vial	Calib Line
1	FogOil.m	17	19	1	

Sample Table:

Vial Num	Sample Name	Sample Amount	Multiplier	Internal Std Amount
1	Acetone Blank			
2	10 ug/mL PAH's			
3	Sample 1			
4	Sample 2			
5	Sample 3			
6	Sample 4			
7	Sample 5			
8	Sample 6			
9	5 ug/mL PAH's			
10	Sample 7			
11	Sample 8			
12	Sample 9			
13	Sample 10			
14	Sample 11			
15	Sample 12			
16	1 ug/mL PAH's			
17	0.5 ug/mL			
18	10 % Fog Oil			
19	0.1 ug/mL			

[redacted] ~~Ag Labs (Environmental [redacted] Analysts)~~ [redacted] (F) [redacted] 9 [redacted] 95 [redacted] 4212 [redacted]
~~32380 Avenue 10 • Madera, California 93638~~
~~(209) 675-0889 • (800) 846-0008 • FAX (209) 675-0884~~

A Division of ABC Laboratories, Inc.
7200 E. ABC Lane, Columbia, MO 65202
Tel: 314/474-8579 Fax: 314/443-9033

CHAIN-OF-CUSTODY FORM

RUSH JOB ☐

ABC/Pan-Ag Labs Job #:	
Date Entered on LIMS:	

CUSTOMER INFORMATION

Customer Name:	3D/ENVIRONMENTAL
Address:	781 NEEB ROAD
City, State, Zip:	CINCINNATI OHIO 45233
Phone:	513-922-8199
Fax #:	513-922-9150

REPORT INFORMATION

Report Attention:	ANGELA SCHMIDT
Project, P.O. #:	
Project Name:	FMC-FOG OIL
Project Manager:	A. Schmidt
Copy To:	N/A

Sampler:

REQUESTED ANALYSES

Lab Sample I.D.# (LAB USE ONLY)	Date Sampled	Time Sampled	Client Sample Description	Location/Depth	Sample Type (S-Soil, L-Liquid, O-Other)	No. of Containers	TPH-GAS/BTEX	TPH-DIESEL	TOTAL VOCS (separate on TAL) (speciated)	SVOCs (on TAL)	% Moisture
1-24A-(XM56)	10-2-95	1325	Background 24 A	temp.=30°C	O	1			✓	✓	✓
2-24A-(XM56)	10-2-95	1330	Sample 10 yards (AF)	"	O	1			✓	✓	✓
3-24A (XM56)	10-2-95	1330	Sample 20 yards (AF)	"	O	1			✓	✓	✓
4-24A (XM56)	10-2-95	1336	Sample 30 yards (AF)	"	O	1			✓	✓	✓
5-R56 (M157)	10-2-95	1443	Background R-56 (M157)	Temp=32°C	O	1			✓	✓	✓
6-R56 (M157)	10-2-95	1455	ON Generator unit	32°C	O	1			✓	✓	✓
7-R56 (M157)	10-2-95	1455	10 yards from unit	32°C	O	1			✓	✓	✓
8-R56 (M157)	10-2-95	1455	20 yards from unit	32°C	O	1			✓	✓	✓
9-VMF (M157)	10-3-95	1020?	Background Vehicle Maintenance	23°C	O	1			✓	✓	✓
10 VMF (M157)	10-3-95	1025	A-duplicate 25'	23°C	O	1			✓	✓	✓
11 VMF (M157)	10-3-95	1025	A duplicate 25'	23°C	O	1			✓	✓	✓
12 VMF (M157)	10-3-95	1026	B-	23°C	O	1			✓	✓	✓

"THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT"
FEB 5 1996
BY [signature]

Turnaround Time:
X Standard Turnaround (10 Working Days) (TPH, LUFT Samples - 5 Days)
___ Rush 5 Day
___ Rush 3 Day
___ Rush 2 Day
___ Rush 1 Day

Comments: Tim Spurgeon
Please contact Angela Schmidt before performing any analysis.
I need all VOC's identified, All SVOC's, and % moisture if possible.

ARE SAMPLES:
☐ TOXIC?
☐ FLAMMABLE?
☐ EXPLOSIVE?
☐ HIGH LEVELS?

PRESERVATIVE:
☐ NaOH N/A
☐ H2SO4
☐ HNO3
☐ HCl
☐ ASCORBIC ACID

FOR CAM METALS:
☐ STLC ☐ TTLC

Stored C-aisle 10-5-95 4:30PM MAP

	Signature	Date	Time	Printed Name	Company Name
Relinquished By:	Angela C. Schmidt	10-4-95	am pm	ANGELA SCHMIDT	3D/E
Received By:	Martha Pezold	10-5-95	am pm	Martha Pezold	ABC Labs
Relinquished By:			am pm		
Received By:			am pm		
Received for Laboratory By:			am pm		

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s): Hexachloroethane — Primary Std. #(s): NA

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	16198 "F"	"B"	10.0 ug/ml	5.00	100	Acetone	0.500 ug/ml
2.	"G"			1.00			0.100 ug/ml
3.	"H"			0.100			0.010 ug/ml
4.							
5.	16198 "I"	"C"	0.100 ug/ml	5.00	100	Isooctane	0.005 ug/ml
6.	"J"	"B"	10.0 ug/ml	0.200 (A) ~~0.100~~			0.020 ug/ml
7.	"K"	"I"	0.005 ug/ml	10.0			0.0005 ug/ml (D)
8.	"L"	~~"E"~~ "K" (A)	0.010 ug/ml	10.0			0.001 ug/ml (D)
9.							
10.							
11.							
12.	(A) (E) JG 28 Sep 95						

"THIS IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
FEB 5 1996
BY Kelly V. Davis

Comments: (D) This dilution was added on 28 Sep 95, the expiration date is still 21 Aug 96. JG 28 Sep 95

Dilutions by: Joann Grant — Date: 13 Sep 95

Checked by: Kelly V. Davis — Date: 30 Jan 96

Approved by: Kelly V. Davis — Date: 30 Jan 96

Dilution Solvent	Lot Number
Isooctane	BI524
Acetone	BK896

Storage Condition/and Location: Refrigerate MAT ID: 1625-635

Expiration: 8/21/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

ABC 42922R 96 00012

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Hexachloroethane — Primary Std. #(s) N/A

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	16198 "A"	16198	1200 ug/mL	83.0	100	i-octane	1000 ug/mL
2.	"B"	"A"	1000	1.00	↓	↓	10.0 ug/mL
3.	"C"	"B"	10.0	1.00	↓	↓	0.100 ug/mL
4.	"D"	↓	↓	0.500	↓	↓	0.0500 ug/mL
5.	"E"	"C"	0.100	10.0	↓	↓	0.0100 ug/mL
6.							
7.							
8.							
9.							
10.							
11.							
12.							

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
FEB 5 1996
BY Kelly V. Davis

Comments:

Dilution Solvent: i-octane — Lot Number: BI 524

Dilutions by: Kelly V. Davis — Date: 21 Aug 95

Checked by: Joann Grant — Date: 30 Jan 96

Approved by: Kelly V. Davis — Date: 30 Jan 96

Storage Condition/and Location: 0-6°C

Expiration: 8/21/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

ABC 42922R PG 00011

ABC Laboratories, Inc.

PREPARATION OF CONCENTRATED STOCK STANDARDS

No.: 16198 Compound: Hexachloroethane

Primary Standard No.: N/A Lot No.: 06203HF Purity: 99% (2)

Final Gross Wt.: 65.2917 g Dilution Volume: 100 ml

Tare Wt.: 65.1700 g (1) Dilution Solvent: i-octane

Net Wt.: 0.1217 g Concentration: 1.20 mg/mL

Adj. Net Wt.: 180 mg

Balance Check Material I.D. No.: 1714-145A

Class S. Weight Added	Before Standard Weighing	After Standard Weighing
100 g	100.0015 g	100.0014 g
100 g + 0.1 g	100.1016 g	100.1014 g
2 g	2.0000 g	1.9999 g
0.1 g	0.1001 g	0.0999 g

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
FEB 5 1996
BY Kelly V. Davis

Solution Information

Expiration Date: 8-21-96

Storage Instructions: 0-6°C

Storage Unit Material Control Number:

Comments: (1)(T) KVD 8-21-95 (2) Three significant figures are used in calculations even though only 2 are given for purity. KVD 8-21-95

(3)(D) 1-30-96

Prepared by: Kelly V. Davis Date: 8-21-96 (3) 95

Checked by: Joann Grant Date: 30 Jan 96

Lab Form No.: 164a (04/07/94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Varies — Primary Std. #(s) NA

	Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1.	C	A	50.0 ug/ml	10.0	100	Iso-octane	5.00 ug/ml
2.	D	A		2.00			1.00 ug/ml
3.	E	A		1.00			0.50 ug/ml
4.	F	B	10.0 ug/ml	1.00			0.10 ug/ml
5.	G	A	50.0 ug/ml	20.0		Acetone	10.0 ug/ml ②
6.	H	A		2.00			1.00 ug/ml ④
7.	I	B	10.0 ug/ml	1.00			0.10 ug/ml ⑤
8.							
9.							
10.							
11.	② This dilution was added on 31 Aug 95; the expiration date is still 28 Aug 96. JCG 31 Aug 95						
12.							

"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"
FEB 5 1996
BY Kelly Y. Davis

Comments: ① ⑤ JCG 30 Aug 95

Dilutions by: Joann Grant — Date: ① 30 Aug 95

Checked by: Kelly Y. Davis — Date: 30 Jan 96

Approved by: Kelly Y. Davis — Date: 30 Jan 96

Dilution Solvent	Lot Number
Iso-octane	BI524
Acetone	BK896

Storage Condition/and Location: Refrigerate MSTID: 1625-1635

Expiration: 8/28/96

ABC Laboratories Inc. Form #AC-13 (04-06-94)

ABC 42922R PG 000089

Observations and/or Remarks Form

Test Material: Fog Oil

Sample Type: Varies

ABC Study No.: 42818

Principal Investigator: Kelly V. Davis

Lab Form No. 72

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

Comments

The 50.0 μg/ml standard (std. mix A) was prepared by taking a 5.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The 10.0 μg/ml standard (std. mix B) was prepared by taking a 1.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The dilution solvent in each flask was Iso-Octane. These standards were stored in a refrigerator.

2-Methyquinoline
6-Methylquinoline
Biphenyl
2,6-Dimethylnapthalene
1,3-Dimethylnapthalene
1,2-Dimethylnapthalene
2,3,5-Trimethylnapthalene
Hexadecane
Fluorene
4,4'-Dimethylbiphenyl
1-Methylfluorene
Phenanthrene
Anthracene
2-Methylphenanthrene
9-Methylanthracene
3,6-Dimethylphenanthrene
2-Ethylanthracene
9,10-Dimethylanthracene

Prepared By: Joann Grant Date: 30 Jan 96

Checked By: Kelly V Davis Date: 30 Jan 96

Observations and/or Remarks Form

Test Material: Fog Oil

Sample Type: Varies

ABC Study No.: 42818

Principal Investigator: Kelly V. Davis

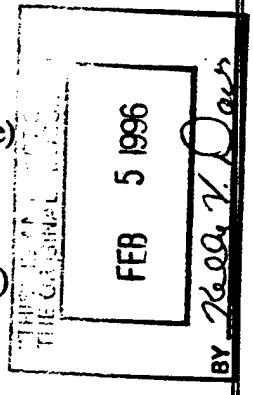
Lab Form No. 72

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

Comments

The folowing compounds were weighed to four decimal places on an analytical balance, MAT ID# 1714-145A. Each compound was weighed into a separate volumetric flask. A correction for purity was made. The amount weighed, the purity, the final volume, and the solvent used are listed after each compound. The nominal concentration for each standard solution is 1.0 mg/ml.

2-Methylquinoline	(0.1003g, 100%, 100 mL, Iso-Octane)
6-Methylquinoline	(0.1023g, 98%, 100 mL, Iso-Octane)
Biphenyl	(0.1003g, 100%, 100 mL, Diethyl Ether)
2,6-Dimethylnapthalene	(0.1011g, 99%, 100 mL, Iso-Octane)
1,3-Dimethylnapthalene	(0.1043g, 96%, 100 mL, Iso-Octane)
1,2-Dimethylnapthalene	(0.1056g, 95%, 100 mL, Iso-Octane)
2,3,5-Trimethylnapthalene	(0.0511g, 98%, 50.0 mL, Iso-Octane)
Hexadecane	(0.1003g, 100%, 100 mL, Diethyl Ether)
Fluorene	(0.1020g, 98%, 100 mL, Iso-Octane)
4,4'-Dimethylphene	(0.1033g, 97%, 100 mL, Iso-Octane)
1-Methylfluorene	(0.1011g, 99%, 100 mL, Iso-Octane)
Phenanthrene	(0.1002g, 100%, 100 mL, Iso-Octane)
Anthracene	(0.1003g, 100%, 100 mL, Acetone)
2-Methylphenanthrene	(0.1056g, 95%, 100 mL, Iso-Octane)
9-Methylanthracene	(0.1021g, 98%, 100 mL, Iso-Octane)
3,6-Dimethylphenanthrene	(0.0515g, 97%, 50.0 mL, Iso-Octane)
2-Ethylanthracene	(0.1020g, 98%, 100 mL, Iso-Octane)
9,10-Dimethylanthracene	(0.1010g, 99%, 100 mL, Iso-Octane)



Prepared By: Joann Grant Date: 30 Jan 96

Checked By: Kelly V. Davis Date: 30 Jan 96

Appendix F

Fog Oil Smoke Sample Information and Analysis

FORT McCLELLAN INSECT COLLECTION DATA

Name: _____ Date: _____

Project Name/No.: Fort McClellan: 7322.19

Collection Location: County: _____ State: Alabama

Quadrangle: _____

UTM Zone: 16

Easting: _____ _____ _____ _____ _____ _____

Northing: _____ _____ _____ _____ _____ _____ _____

Trap Type: _____

Trap Deployment Date: _____ Time (military): _____

Trap Collection: Date: _____ Time (military): _____

Habitat Description: _____

_____

_____

_____

_____

General Weather Description During Trapping Period:

_____

_____

_____

_____

Sample Number: _____ Weight of insects in sample _____

Time sample placed on ice for anesthesia: from _____ h _____ h

Time sample placed on dry ice in cooler and sent to lab: _____ h

FORT McCLELLAN WEATHER DATA

Date:_____Initials:_____Project #: 7322.19
Net location: County: _____
Quadrangle:_____
Site description:

Time (2400 h)	Temp (C/F)	Wind Speed	Wind Direction	Moon Phase	% Cloud Cover	Comments

FORT McCLELLAN TISSUE SAMPLE DATA

Project # 7322.19 Date:_____ Initials:_____
Organism:_____ Type of tissue:_____
Sample number:_____
Description of site where organsim was caught:
County: State: Alabama
Site name:
Capture method:_____
Time of capture:_____
Weight of organism:_____
Weight of tissue:_____
Length of time on ice for anesthesis: _____
Time and date samples placed ion dry ice for shipment to lab_____
_____
Comments:_____
_____

FORT McCLELLAN NET SITE DESCRIPTION

Project Number: 7322.19 Date: _____

County: _____ Name: _____

Quad: _____ Stream/Drainage: _____

UTM Zone: _____

Easting: _____ _____ _____ _____ _____ _____

Northing: _____ _____ _____ _____ _____ _____ _____

Comments: _____

_____

_____

_____

_____

STREAM:

Bank Height:

Channel Width:

Stream Width:

Substratum:

Average Water Depth:

Turbidity:

Canopy Closure:

VEGETATION:

Dominant canopy species:

Average canopy DBH:
Dominant understory species:

Average understory DBH:
Herbaceous species:

FORT M^{C}CLELLAN BAT CAPTURE DATA

Project number 7322.19 _____ **Date:** _____ **Initials:** _____ **Page**____**of**_____

Net Location: County,_____**, State:** Alabama **(To make comments on reverse, please refer to capture number)**

Quadrangle: _____ **Site Name:** _____

Net size:_____**Net Number:** _____

Site Description/Comments: _____

Capture No.	Time (military)	Height (m)	Age A or J	Reprod. Cond.	Weight (g)	RFA Length (mm)	Sex	guano sample taken?	Species

Appendix E

Field Data Sheets

TABLE D-4. Insect orders and amounts caught at Choccolocco reference site.

Black Light		White Light		Total	
Order	Number	Order	Number	Order	Number
Homoptera	1	Homoptera	23	Homoptera	24
Trichoptera	39	Trichoptera	53	Trichoptera	92
Hymenoptera	2	Hymenoptera	0	Hymenoptera	2
Hemiptera	5	Hemiptera	5	Hemiptera	10
Dermaptera	3	Dermaptera	0	Dermaptera	3
Lepidoptera	26	Lepidoptera	45	Lepidoptera	71
Coleoptera	507	Coleoptera	112	Coleoptera	619
Neuroptera	1	Neuroptera	1	Neuroptera	2
Psocoptera	0	Psocoptera	0	Psocoptera	0
Orthoptera	1	Orthoptera	1	Orthoptera	2
Diptera	18	Diptera	65	Diptera	83
Ephemeroptera	5	Ephemeroptera	35	Ephemeroptera	40
Total	608		340		948
No. Orders	11		9		11
				Diversity	**7.452064**
				Evenness	**3.107752**

TABLE D-3. Insect orders and amounts caught at Battle Drill Area.

Black Light		White Light		Total	
Order	Number	Order	Number	Order	Number
Homoptera	2	Homoptera	3	Homoptera	5
Trichoptera	31	Trichoptera	8	Trichoptera	39
Hymenoptera	2	Hymenoptera	0	Hymenoptera	2
Hemiptera	1	Hemiptera	6	Hemiptera	7
Dermaptera	0	Dermaptera	0	Dermaptera	0
Lepidoptera	14	Lepidoptera	28	Lepidoptera	42
Coleoptera	55	Coleoptera	25	Coleoptera	80
Neuroptera	3	Neuroptera	0	Neuroptera	3
Psocoptera	0	Psocoptera	0	Psocoptera	0
Orthoptera	0	Orthoptera	0	Orthoptera	0
Diptera	0	Diptera	0	Diptera	0
Ephemeroptera	0	Ephemeroptera	1	Ephemeroptera	1
Total	108		71		179
No. Orders	7		6		8
				Diversity	**5.8417**
				Evenness	**2.8093**

TABLE D-2. Insect orders and amounts caught at Range 56.

Black Light		White Light		Total	
Order	Number	Order	Number	Order	Number
Homoptera	0	Homoptera	6	Homoptera	6
Trichoptera	9	Trichoptera	2	Trichoptera	11
Hymenoptera	11	Hymenoptera	21	Hymenoptera	32
Hemiptera	17	Hemiptera	11	Hemiptera	28
Dermaptera	0	Dermaptera	0	Dermaptera	0
Lepidoptera	15	Lepidoptera	56	Lepidoptera	71
Coleoptera	56	Coleoptera	78	Coleoptera	134
Neuroptera	0	Neuroptera	1	Neuroptera	1
Psocoptera	0	Psocoptera	0	Psocoptera	0
Orthoptera	0	Orthoptera	1	Orthoptera	1
Diptera	0	Diptera	3	Diptera	3
Ephemeroptera	0	Ephemeroptera	0	Ephemeroptera	0
Total	108		179		287
No. Orders	5		9		9
				Diversity	**6.3435**
				Evenness	**2.8871**

TABLE D-1. Insect orders and amounts caught at Range 24 A.

Black Light		White Light		Total	
Order	Number	Order	Number	Order	Number
Homoptera	2	Homoptera	11	Homoptera	13
Trichoptera	3	Trichoptera	3	Trichoptera	6
Hymenoptera	5	Hymenoptera	3	Hymenoptera	8
Hemiptera	10	Hemiptera	8	Hemiptera	18
Dermaptera	2	Dermaptera	0	Dermaptera	2
Lepidoptera	28	Lepidoptera	100	Lepidoptera	128
Coleoptera	47	Coleoptera	44	Coleoptera	91
Neuroptera	0	Neuroptera	2	Neuroptera	2
Psocoptera	0	Psocoptera	2	Psocoptera	2
Orthoptera	0	Orthoptera	1	Orthoptera	1
Diptera	0	Diptera	14	Diptera	14
Ephemeroptera	0	Ephemeroptera	0	Ephemeroptera	0
Total	97		188		285
No. Orders	7		10		11
				Diversity	**6.3484**
				Evenness	**2.6475**

Appendix D

Insect Analysis and Results

TABLE C-8. Species of trees and shrubs along transect 2 at Choccolocco Creek. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Beech	2	18.1	10
American Beech	2	< 1.0	2
American Elm	2	4.3	2
American Elm	2	9.5	5
American Elm	2	6.9	4
American Elm	2	5.8	3
Bitternut Hickory	2	0.5	2
Boxelder	2	1.0	2
Boxelder	2	2.8	3
Boxelder	2	6.9	3
Boxelder	2	1.5	2
Boxelder	2	4.1	2
Boxelder	2	34.2	8
Green Ash	2	1.8	3
Green Ash	2	1.5	2
Green Ash	2	49.6	16
Privet	2	2.0	3
Red Maple	2	1.0	4
Sweet Gum	2	26.8	8
Sweet Gum	2	6.8	7
Sweet Gum	2	6.7	7
Sweet Gum	2	9.5	4
Sweet Gum(dead)	2	22.5	7
Sweet Gum(dead)	2	18.9	5
Tulip Poplar	2	44.4	20
Tulip Poplar	2	45.0	15
Tulip Poplar	2	51.0	20

TABLE C-7. Species of trees and shrubs along transect 1 at Choccolocco Creek. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Elm	1	8.5	7
American Elm	1	9.0	5
American Elm	1	6.0	3
Green Ash	1	13.1	8
Green Ash	1	20.2	13
Honeysuckle	1	4.1	3
Honeysuckle	1	2.0	2
Honeysuckle	1	2.5	2
Honeysuckle	1	2.0	2
Honeysuckle	1	< 1.0	2
Honeysuckle	1	1.0	2
Honeysuckle	1	1.0	2
Longleaf Pine	1	53.1	18
Musclewood	1	4.3	3
Red Maple	1	4.3	5
Red Maple	1	2.7	2
Red Maple	1	1.0	2
Red Maple	1	13.3	7
Red Maple	1	6.6	3
Sweet Gum	1	27.8	16
Sweet Gum	1	23.7	11
Sweet Gum	1	39.5	3
Sweet Gum	1	11.0	11
Sweet Gum	1	14.7	15
Sweet Gum	1	9.8	8
Sweet Gum	1	32.1	16
Sweet Gum	1	14.8	13
Sweet Gum	1	8.9	5
Sweet Gum	1	20.0	11
Sweet Gum	1	28.1	13
Sweet Gum	1	19.0	10
Sweet Gum	1	12.2	8
Tulip Poplar	1	25.9	13
Tulip Poplar	1	29.3	11
Water Oak	1	35.3	11
Water Oak	1	44.8	13

TABLE C-6. Species of trees and shrubs along transect 2 at Battle Drill Area. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Green Ash	2	1.0	3
Loblolly Pine	2	30.8	10
Mockernut Hickory	2	3.4	3
Post Oak	2	5.1	4
Red Maple	2	3.0	6
Sweet Gum	2	1.0	2
Sweet Gum	2	1.0	2
Sweet Gum	2	2.3	3
Sweet Gum	2	5.4	3
Sweet Gum	2	2.2	3
Sweet Gum	2	4.1	4
Sweet Gum	2	4.5	4
Sweet Gum	2	6.1	5
Sweet Gum	2	3.6	3
Sweet Gum	2	3.0	3
Sweet Gum	2	2.7	2
Sweet Gum	2	4.5	3
Sweet Gum	2	5.1	7
Sweet Gum	2	3.1	6
Sweet Gum	2	1.0	2
Sweet Gum	2	2.7	3
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	8.2	6
Sweet Gum	2	5.2	5
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	3
Sweet Gum	2	7.4	5
Water Oak	2	32.2	13
Water Oak	2	12.7	8
Water Oak	2	15.1	8
Winged Elm	2	1.0	3
Winged Elm	2	<1.0	2

TABLE C-5. Species of trees and shrubs along transect 1 at Battle Drill Area. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Plum	1	7.7	5
American Plum	1	4.6	5
American Plum	1	3.2	3
American Plum	1	7.5	5
Bitternut Hickory	1	3.1	3
Bitternut Hickory	1	12.1	8
Bitternut Hickory	1	5.6	6
Black Cherry	1	8.3	5
Boxelder	1	1.4	3
Boxelder	1	1.0	2
Boxelder	1	9.9	7
Boxelder	1	5.2	5
Green Ash	1	22.5	10
Green Ash	1	21.2	11
Green Ash	1	2.2	5
Green Ash	1	5.9	6
Green Ash	1	4.8	3
Ironwood	1	10.5	6
Loblolly Pine	1	32.5	12
Loblolly Pine	1	26.2	11
Loblolly Pine	1	22.6	11
Loblolly Pine	1	10.3	6
Musclewood	1	2.5	3
Musclewood	1	1.0	2
Sweet Gum	1	1.8	3
Sweet Gum	1	9.5	10
Sweet Gum	1	12.9	10
Tulip Poplar	1	8.8	5
Tulip Poplar	1	18.2	7
Tulip Poplar	1	22.8	8
Unknown (dead)	1	12.9	4
Water Oak	1	8.0	5
Water Oak	1	6.8	5
Water Oak	1	4.7	5
Winged Elm	1	7.3	4
Winged Sumac	1	3.5	3

TABLE C-4. Species of trees and shrubs along transect 2 at Range 56. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Elm	2	16.5	7
American Elm	2	11.1	5
Basswood	2	13.9	11
Basswood	2	18.2	7
Basswood	2	15.5	5
Boxelder	2	14.2	7
Boxelder	2	70.0	10
Boxelder	2	19.0	7
Elderberry	2	<1.0	3
Elderberry	2	<1.0	2
Elderberry	2	<1.0	2
Elderberry	2	<1.0	3
Flowering Dogwood	2	2.2	3
Flowering Dogwood	2	4.6	3
Hackberry	2	8.9	4
Mockernut Hickory	2	<1.0	2
Paw Paw	2	<1.0	2
Paw Paw	2	2.5	3
Paw Paw	2	<1.0	3
Paw Paw	2	<1.0	2
Paw Paw	2	<1.0	2
Paw Paw	2	1.5	3
Paw Paw	2	2.0	3
Paw Paw	2	3.0	3
Paw Paw	2	<1.0	3
Paw Paw	2	<1.0	2
Privet	2	<1.0	2
Privet	2	<1.0	2
Privet	2	<1.0	3
Privet	2	<1.0	3
Privet	2	<1.0	2
Redbud	2	2.8	2
Redbud	2	1.0	3
Redbud	2	<1.0	2
Redbud	2	1.5	3
Tulip Poplar	2	6.3	3
Water Oak	2	1.5	3
Water Oak	2	1.0	2
Water Oak	2	52.7	13
Water Oak	2	41.0	15
Winged Elm	2	<1.0	2

TABLE C-3. Continued.

Species	Transect	dbh (cm)	Height(m)
Privet	1	1.5	3
Redbud	1	1.0	2
Redbud	1	1.6	3
Redbud	1	1.0	3
Redbud	1	2.9	3
Slippery Elm	1	2.2	2
Sweet Gum	1	11.2	8
Tulip Poplar	1	<1.0	2
Winged Elm	1	<1.0	2
Winged Elm	1	<1.0	2
Winged Sumac	1	<1.0	2

TABLE C-3. Species of trees and shrubs along transect 1 at Range 56. Diameter at breast height (dbh), and height of trees also are given.

Species	Transect	dbh (cm)	Height(m)
Boxelder	1	<1.0	2
Elderberry	1	<1.0	2
Green Ash	1	1.0	2
Green Ash	1	2.3	3
Green Ash	1	<1.0	2
Green Ash	1	<1.0	2
Loblolly Pine	1	13.4	10
Loblolly Pine	1	23.2	13
Loblolly Pine	1	24.9	13
Loblolly Pine	1	19.2	11
Loblolly Pine	1	26.4	11
Loblolly Pine	1	20.1	11
Loblolly Pine	1	27.6	7
Loblolly Pine	1	27.7	11
Loblolly Pine	1	22.9	13
Loblolly Pine	1	26.6	15
Loblolly Pine	1	19.8	11
Loblolly Pine	1	24.4	13
Loblolly Pine	1	15.4	10
Loblolly Pine	1	9.6	3
Loblolly Pine	1	11.4	8
Loblolly Pine	1	12.9	8
Loblolly Pine	1	16.6	8
Loblolly Pine	1	14.6	9
Loblolly Pine	1	22.0	10
Loblolly Pine	1	8.3	8
Loblolly Pine	1	11.0	7
Loblolly Pine	1	13.7	8
Loblolly Pine	1	8.7	7
Loblolly Pine	1	7.8	7
Loblolly Pine	1	22.6	11
Loblolly Pine	1	7.6	7
Loblolly Pine	1	23.3	11
Loblolly Pine	1	8.7	8
Loblolly Pine	1	16.9	11
Loblolly Pine	1	20.2	10
Loblolly Pine	1	19.1	10
Loblolly Pine (dead)	1	17.2	7
Loblolly Pine (dead)	1	15.8	5
Loblolly Pine (dead)	1	12.8	3
Loblolly Pine (dead)	1	6.0	5
Loblolly Pine (dead)	1	10.3	5
Loblolly Pine (dead)	1	6.8	5
Loblolly Pine (dead)	1	17.7	3
Privet	1	<1.0	2

TABLE C-2. Continued.

Species	Transect	dbh (cm)	Height (m)
Pignut Hickory	2	< 1.0	2
Pignut Hickory	2	1.0	2
Pignut Hickory	2	2.0	2
Post Oak	2	17.7	13
Post Oak	2	3.7	4
Post Oak	2	27.4	11
Red Oak	2	9.4	8
Red Oak	2	2.0	2
Red Oak	2	10.0	8
Red Oak	2	1.0	2
Red Oak	2	1.5	2
Red Oak	2	1.5	2
Red Oak	2	2.0	3
Red Oak	2	3.6	4
Shagbark Hickory	2	2.5	4
Sourwood	2	2.9	3
Sourwood	2	4.9	4
Sourwood	2	10.8	7
Sourwood	2	2.5	3
Sourwood	2	3.2	4
Tulip Poplar	2	4.3	5
Virginia Pine	2	1.0	2
White Oak	2	12.8	11
White Oak	2	6.6	5
White Oak	2	12.8	7
White Oak	2	3.1	3
White Oak	2	18.4	10
White Oak	2	1.0	2
White Oak	2	3.8	3

TABLE C-2. Species of trees and shrubs along transect 2 at Range 24 A. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Basket Oak	2	8.5	7
Basket Oak	2	41.6	25
Blackjack Oak	2	< 1.0	2
Blackjack Oak	2	4.3	3
Blackjack Oak	2	2.0	3
Blackjack Oak	2	2.7	3
Blackjack Oak	2	2.0	2
Flowering Dogwood	2	1.0	2
Flowering Dogwood	2	10	7
Flowering Dogwood	2	1.7	2
Flowering Dogwood	2	6.6	5
Flowering Dogwood	2	1.7	2
Flowering Dogwood	2	2.0	2
Longleaf Pine	2	18.2	11
Longleaf Pine	2	14.7	11
Longleaf Pine	2	13.9	13
Longleaf Pine	2	8.4	7
Longleaf Pine	2	3.2	2
Longleaf Pine	2	1.0	2
Longleaf Pine	2	10.7	7
Mockernut Hickory	2	1.0	3
Persimmon	2	3.0	4
Persimmon	2	1.0	3
Persimmon	2	2.1	2
Persimmon	2	1.8	2
Persimmon	2	< 1.0	2
Persimmon	2	1.7	2
Persimmon	2	< 1.0	2
Persimmon	2	1.4	3
Persimmon	2	1.5	3
Persimmon	2	2.0	2
Persimmon	2	1.0	3
Persimmon	2	1.5	3
Persimmon	2	2.6	3
Persimmon	2	2.0	3
Persimmon	2	< 1.0	2
Persimmon	2	< 1.0	2
Persimmon	2	< 1.0	2
Persimmon	2	1.2	2
Persimmon	2	2.6	2
Persimmon	2	1.5	3
Persimmon	2	1.2	3
Persimmon	2	1.5	3
Pignut Hickory	2	1.7	3

TABLE C -1. Continued.

Species	Transect	dbh (cm)	Height (m)
Pignut Hickory	1	2.8	3
Post Oak	1	17.9	13
Red Maple	1	1.5	3
Red Maple	1	2.0	2
Red Maple	1	< 1.0	2
Red Maple	1	1.2	3
Red Maple	1	2.5	4
Red Maple	1	4.5	5
Red Maple	1	1.5	3
Sourwood	1	2.2	3
Virginia Pine	1	1.2	3
White Oak	1	1.0	3
Winged Sumac	1	2.0	2
Winged Sumac	1	1.0	3
Winged Sumac	1	1.3	2

TABLE C -1. Species of trees and shrubs along transect 1 at Range 24 A. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Black Oak	1	40.6	18
Black Oak	1	1.5	2
Black Oak	1	1.5	3
Black Oak	1	1.8	3
Black Oak	1	14	11
Blackjack Oak	1	2.5	2
Blackjack Oak	1	2.5	2
Blackjack Oak	1	13.7	11
Blackjack Oak	1	2.5	4
Blackjack Oak	1	1.8	3
Flowering Dogwood	1	1.5	2
Hazel Alder	1	3.1	5
Hazel Alder	1	2.5	3
Hazel Alder	1	< 1.0	2
Hazel Alder	1	< 1.0	2
Longleaf Pine	1	3.7	3
Longleaf Pine	1	2.5	3
Longleaf Pine	1	2.0	3
Longleaf Pine	1	1.9	3
Longleaf Pine	1	3.0	3
Longleaf Pine	1	8.4	7
Longleaf Pine	1	31.1	16
Longleaf Pine	1	8.3	8
Longleaf Pine	1	5.2	5
Mockernut Hickory	1	1.5	2
Mockernut Hickory	1	1.2	2
Mockernut Hickory	1	1.0	2
Persimmon	1	1.8	2
Persimmon	1	2.0	3
Persimmon	1	1.2	2
Persimmon	1	1.8	3
Persimmon	1	2.2	3
Persimmon	1	1.1	3
Persimmon	1	1.5	3
Pignut Hickory	1	1.8	2
Pignut Hickory	1	1.0	3
Pignut Hickory	1	1.0	2
Pignut Hickory	1	1.0	3
Pignut Hickory	1	1.5	3
Pignut Hickory	1	1.3	3
Pignut Hickory	1	< 1.0	2
Pignut Hickory	1	< 1.0	2
Pignut Hickory	1	1.0	3

Appendix C

Species of Trees and Shrubs at each Sample Site

TABLE B-4. Characteristics of water and sediment samples collected at Choccolocco Creek. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	7-dup[1]	8	9	10
Surface water sample number	**SW4-1**	**SW4-2**	**SW4-3**	**SW4-4**	**SW4-5**	**SW4-6**	**SW4-7**	**SW4-dup-7**	**SW4-8**	**SW4-9**	**SW4-10**
Serial #	334398	352196	334395	334388/9	334397	334384	334392	334378	334393	334343	334394
Stream width (m)	6.6	6.6	13.3	13.3	10	6.6	10	10	5	8.3	13.3
Stream depth (m)	0.55	1.15	0.3	0.75	0.7	0.6	0.7	0.7	0.325	0.45	0.275
Sample depth (m)	0.4	0.9	0.15	0.4	0.35	0.35	0.45	0.45	0.15	0.2	0.15
Temperature (C)	25	26	26	26	26	26	26	26	26	27	27
pH	7.7	7.9	7.8	7.9	7.9	7.8	7.8	7.8	7.8	7.9	7.9
DO_2 ppm	4	5	6	7	5	7	7	5	6	6	7
Total dissolved solids	40	50	40	40	40	40	40	40	40	40	40
Hardness mg/L	58	60	56	54	52	60	54	54	56	60	
Turbidity	medium	medium	low	medium	med-low	low	med-low	med-low	low	low	low
Sediment sample number	**SD4-1**	**SD4-2**	**SD4-3**	**SD4-4**	**SD4-5**	**SD4-6**	**SD4-7**	**SD4-dup-7**	**SD4-8**	**SD4-9**	**SD4-10**
Sediment type	mud, sand	mud	mud, silt	mud, sand	silt, gravel	gravel, sand	silt, sand	silt, sand	gravel, mud	mud, sand	large gravel

[1]: dup refers to a replicate sample.

TABLE B-3. Characteristics of water and sediment samples collected at Range 56. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	8	9	10	10-dup[1]
Surface water sample number	**SW3-1**	**SW3-2**	**SW3-3**	**SW3-4**	**SW3-5**	**SW3-6**	**SW3-7**	**SW3-8**	**SW3-9**	**SW3-10**	**SW3-dup-10**
Serial #	352200	352195	352199	334403	352194	352191	352189	352190	5119010	352193	352198
Stream width (m)	13.3	16.6	13.3	20		16.6	20	20	6.6	10	10
Stream depth (m)	0.5	0.4	0.3	0.4	0.6	0.5	0.2	0.45	0.6	0.475	0.475
Sample depth (m)	0.3	0.2	0.2	0.25	0.3	0.35	0.1	0.25	0.35	0.25	0.25
Temperature (C)	24	24	25	27	26	26	25	26	25	25	25
pH	8.1	8.2	8.4	8.3	8.3	8	8	8.2	8.2	8.3	8.3
DO_2 ppm	7	7	8	7	6	8	10	7	8	8	8
Total dissolved solids	80	90	90	80	80	80	80	80	80	80	90
Hardness mg/L	113	114	126	114	118	126	116	128	120	122	122
Turbidity	high	medium	medium	high	high	medium	low	medium	medium	medium	medium
Sediment sample number	**SD3-1**	**SD3-2**	**SD3-3**	**SD3-4**	**SD3-5**	**SD3-6**	**SD3-7**	**SD3-8**	**SD3-9**	**SD3-10**	**SD3-dup-10**
Sediment type	mud, silt	mud, muck	mud, muck	muck, mud	muck, mud	rocks	rocks, gravel	rocks, silt	bedrock, sand	gravel, bedrock	gravel, bedrock

[1]: dup refers to a replicate sample.

TABLE B-2. Characteristics of water and sediment samples collected at Range 24A. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location		
	1	2	3
Surface water sample number	**SW1-1**	**SW1-2**	**SW1-3**
Serial #	352188	334359	334382
Stream width (m)	1.1	1.2	0.6
Stream depth (m)	0.2	0.2	0.175
Sample depth (m)	0.1	0.1	0
Temperature (C)	26	28	22
pH	7.6	7.7	6.4
DO_2 ppm	6	6	5
Total Dissolved Solids	10	20	0
Hardness mg/L	10	20	6
Turbidity	clear	clear	clear
Sediment Sample number	**SD1-1**	**SD1-2**	**SD1-3**
Sediment type	rock, gravel, detritus	rock, silt, gravel	orange precipitate

TABLE B-1. Characteristics of water and sediment samples collected at Battle Drill Area. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	8	9	10	10-dup[1]
Surface water sample number	**SW2-1**	**SW2-2**	**SW2-3**	**SW2-4**	**SW2-5**	**SW2-6**	**SW2-7**	**SW2-8**	**SW2-9**	**SW2-10**	**SW2-dup-10**
Serial #	334407	334409		334405	334410	334411	334412	334413	334406	334414	3344
Stream width (m)	6.6	6.6	6.6	6.6	11	11	16.6	50	16.6	11	6.6
Stream depth (m)	0.2	0.6	0.2	0.55	0.2	0.5	0.45	0.85	1.2	1.05	0.15
Sample depth (m)	0.1	0.4	0.1	0.3	0.15	0.2	0.2	0.4	0.9	0.7	0.125
Temperature (C)	25	25	25	26	26	25	27	26	26	26	26
pH	8.1	7.9	7.8	7.8	7.8	7.8	7.9	7.9	7.9	7.8	7.9
DO_2 ppm	10	8	8	6	7	7	6	8	8	7	8
Total Dissolved Solids	80	90	80	80	80	80	80	80	80	80	80
Hardness mg/L	126	130	126	126	126	118	120	130	120	128	114
Turbidity	low	high	high	high	high	medium	medium	high	high	high	low
Sediment Sample number	**SD2-1**	**SD2-2**	**SD2-3**	**SD2-4**	**SD2-5**	**SD2-6**	**SD2-7**	**SD2-8**	**SD2-9**	**SD2-10**	**SD2-dup-10**
Sediment type	gravel, sand	rock, sand	sand, mud	sand, mud	sand, gravel	sand, gravel	muck, sand, gravel	sand, muck, gravel	gravel, sand	gravel, sand	gravel, sand

[1]: dup refers to a replicate sample.

Appendix B

Water and Sediment Data

INSTRUMENT PARAMETERS FORM

ABC Study No : 42818

Test Material : PNA's

Sample Matrix : Varies

Autosampler : HP5890 Series I (1716-130A)

V.G Channel No. : 40

Column : DB-5 30m X 0.25mm ID 0.25 μ film thickness (4478332)

Temperature Program :

- Initial Temp. : 50°C
- Initial Hold : 1.00 min
- Initial Ramp : 30°C/min to 80°C
- Ramp A : 5°C/min to 230°C
- Ramp B : 35°C/min to 300°C
- Final Hold : 3.00 min
- Purge On : 1.50 min

Injector Temperature : 275°C

Flow Rate: 1.5 mL/min

Detector : FID

- Temperature : 300°C
- Range: 0
- Response Time: 0.1 sec

Injection Volume: 1.0 μl

These parameters were used for each set that was injected on this instrument.

Prepared By: Joann Grant Date: 31 Jan 96

Checked By: Kelly V. Davis Date: 31 Jan 96

INSTRUMENT PARAMETERS FORM

ABC Study No : 42818

Test Material : Hexachloroethane

Sample Matrix : Varies

Autosampler: HP5890 Series II (1626-139)

V.G. Channel No. : 39

Column: DB-5 15m X 0.53mm ID 0.5 μ film thickness (5635316B)

Temperature Program:

Initial Temp. : 50°C
Initial Hold : 1.00 min
Initial Ramp : 2.5°C/min to 70°C
Ramp A : 50°C/min to 300°C
Final Hold : 1.00 min
Purge On : 1.50 min

Injector Temperature : 275°C

Flow Rate: 1.5 mL/min

Detector : ECD
Temperature : 300°C
Range: 3

Injection Volume: 1.0 μl

These parameters were used for every set injected on this instrument.

Prepared By: Joann Grant Date: 31 Jan 96

Checked By: Kelly V. Davis Date: 31 Jan 96

Observations and/or Remarks Form	
Test Material: Fog Oil Sample Type: Varies ABC Study No.: 42818 Principal Investigator: Kelly V. Davis	Lab Form No. 72 ABC Laboratories, Inc. 7200 E. ABC Lane Columbia, MO 65202-8015

Comments

The petroleum ether and methylene chloride fractions were collected from the silica gel column and injected on both FID and ECD. The results from both fractions were summed and reported as a total residue.

Prepared By: Joann Grant Date: 5 Feb 96

Checked By: Kelly V. Davis Date: 5 Feb 96

ABC Laboratories, Inc

OBSERVATIONS AND/OR REMARKS FORM

Test Material: Fog Oil

Sample Type: Bats

ABC Study No: 42818

The following bats were dissected; the kidneys and livers were placed in vials containing 10% formalin and identified as follows:

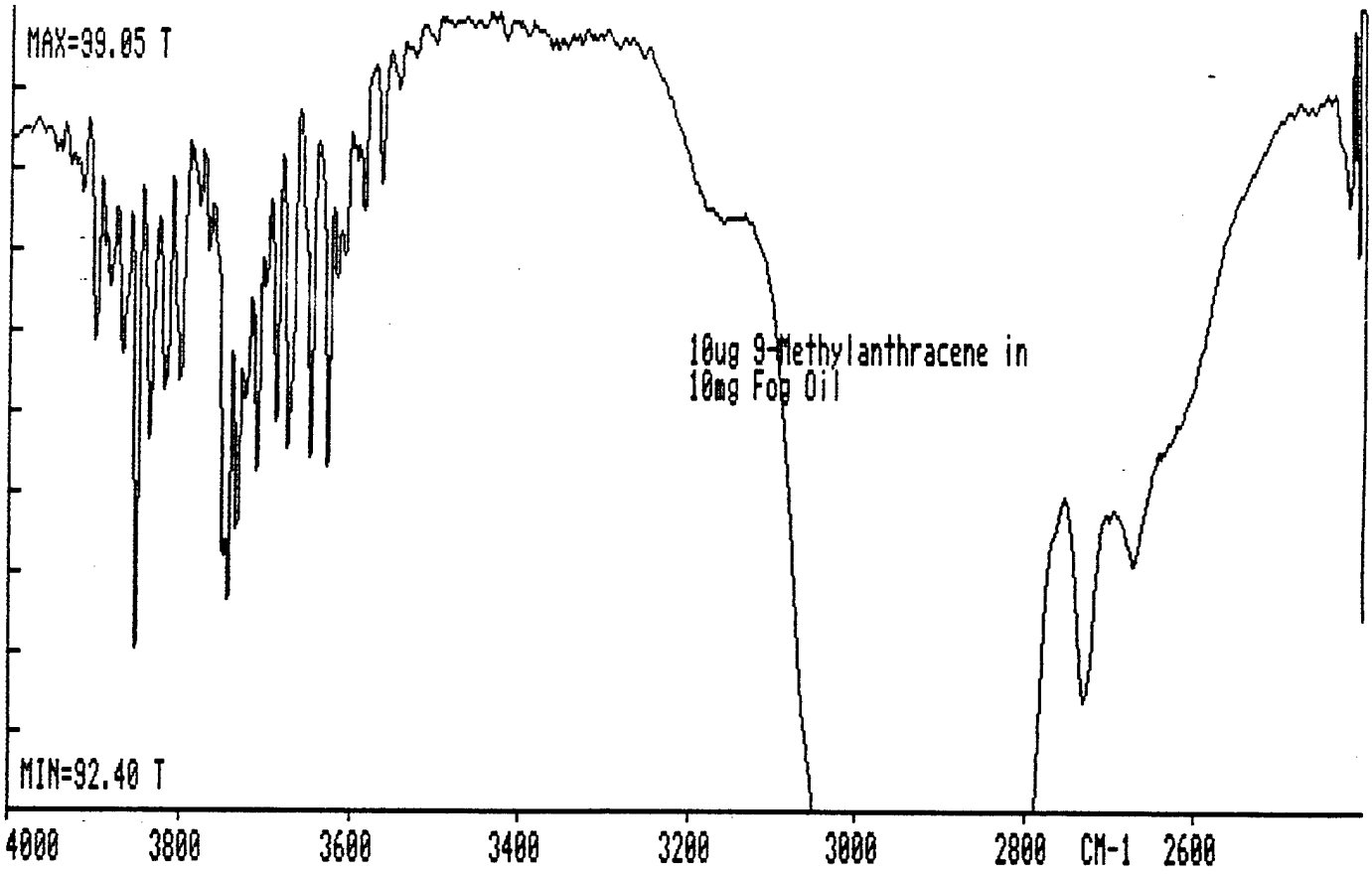
Sample ID	Field ID	Sex	
TM1-1-808	TM1-1	M	Liver Decomposed
TM1-2-809	TM1-2	F	
TM3-1-809	T-M3-1	M	Liver yellowish, small
TM3-2-810	TM3-2	F	Liver yellowish, small
TM4-1-809	TM4-1	M	
TM4-1-810	TM4-810-1	F	Liver somewhat decomposed
TM3-6-811	TM3-6	F	
TM4-1-811	TM4-1-811	M	
TM2-1-812	TM2-1	F	
TM2-11-812	TM2-11	M	Liver Decomposed
TM2-2-812	TM2-2	F	
TM2-3-812	TM2-3	F	
TM2-4-812	TM2-4	F	Liver Decomposed
TM2-5-812	TM2-5	F	
TM2-6-812	TM2-6	F	
TM4-1-812	TM4-1-812	M	Liver Decomposed
TM2-1-813	TM2-1	M	
TM4-1-813	TM4-1-813	M	
TM4-2-813	TM4-2-813	M	
TM4-3-813	TM4-3-813	M	

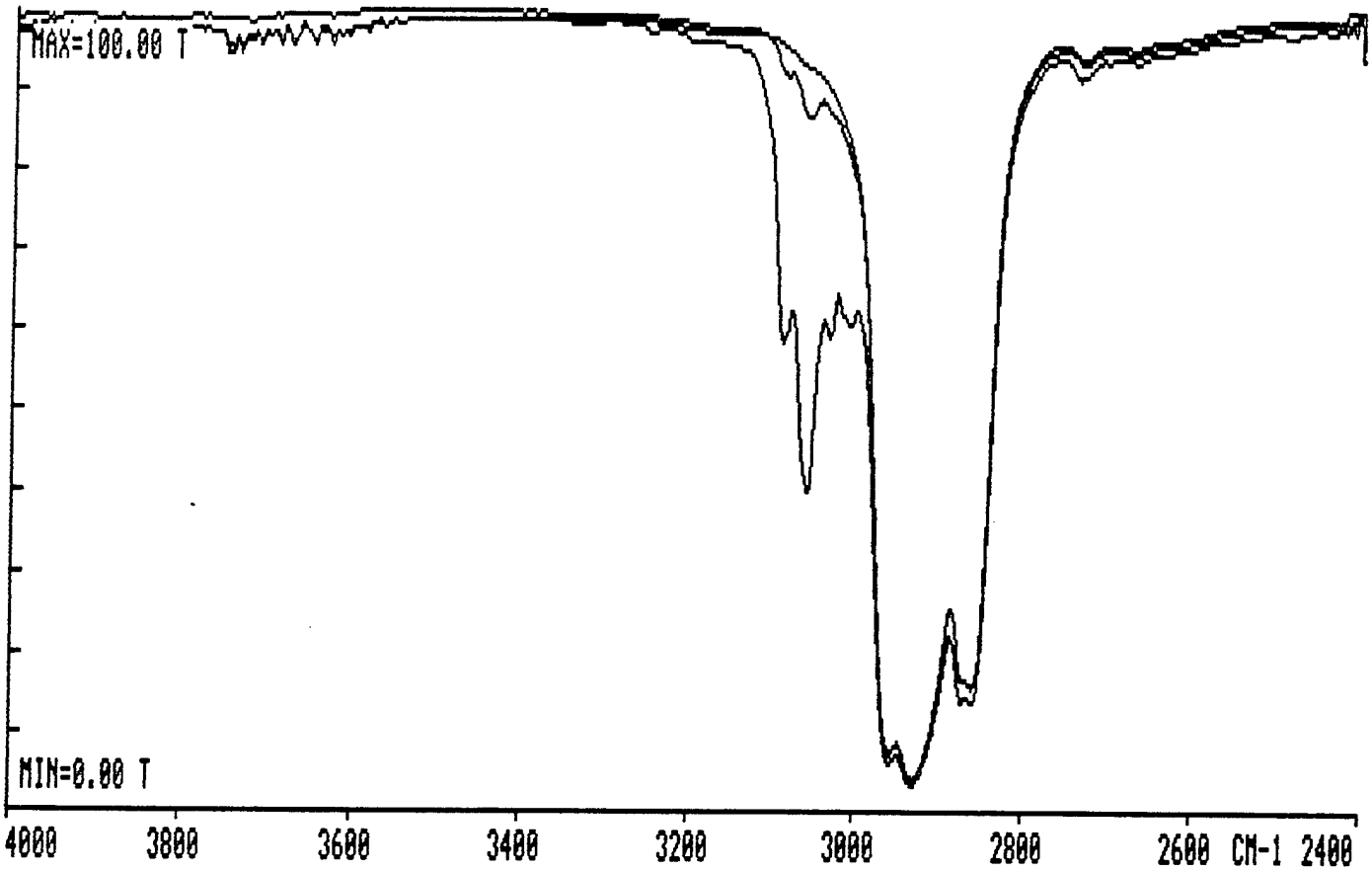
Prepared By: Jill K. Cooper Date: 8 Sept 95

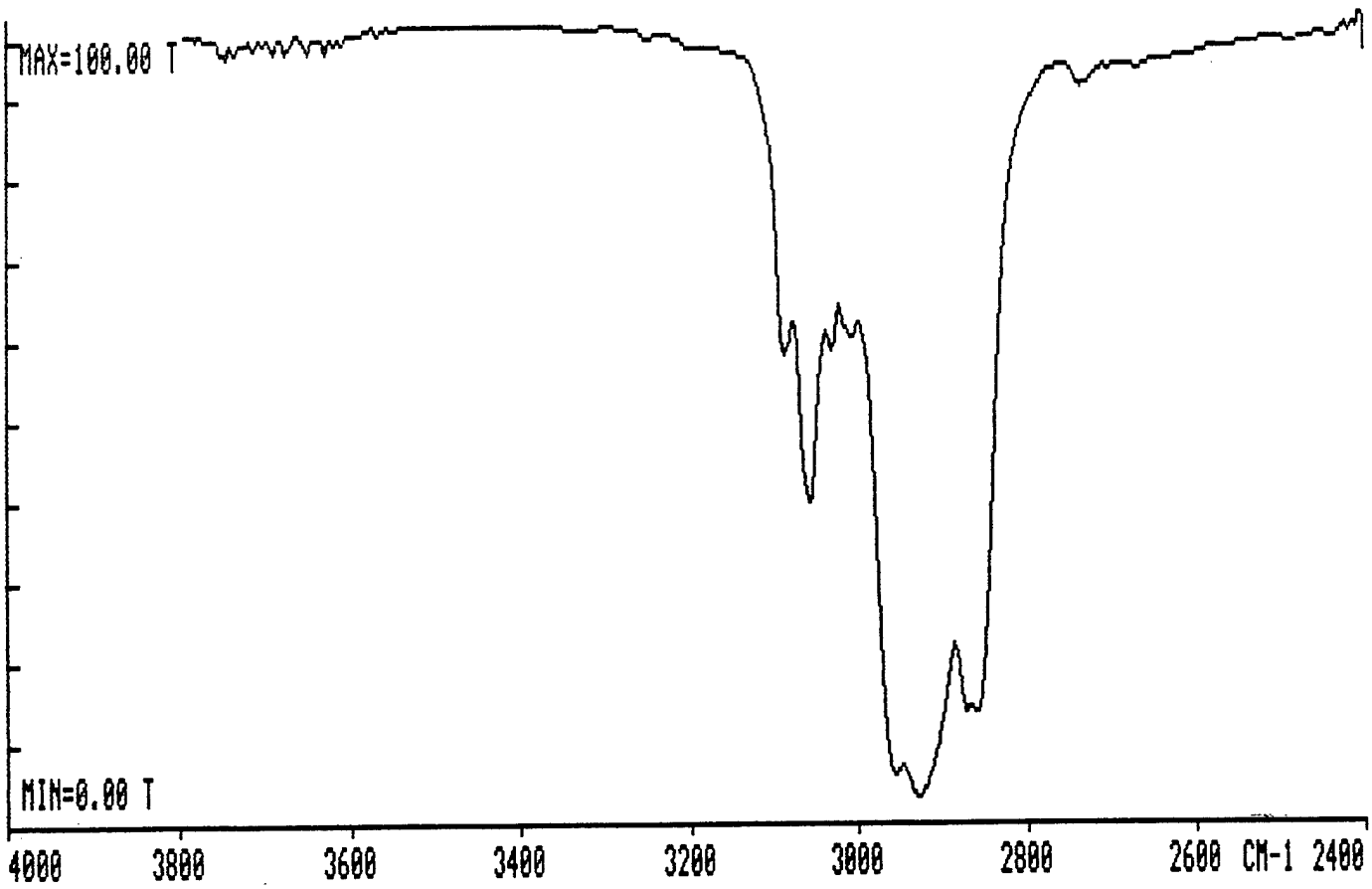
Checked By: Timothy A. Burks Date: 9-8-95

Principal Analytical Investigator: Kelly V. Davis Date: 11 Sept 95

Form #AC-04A (10/10/91)

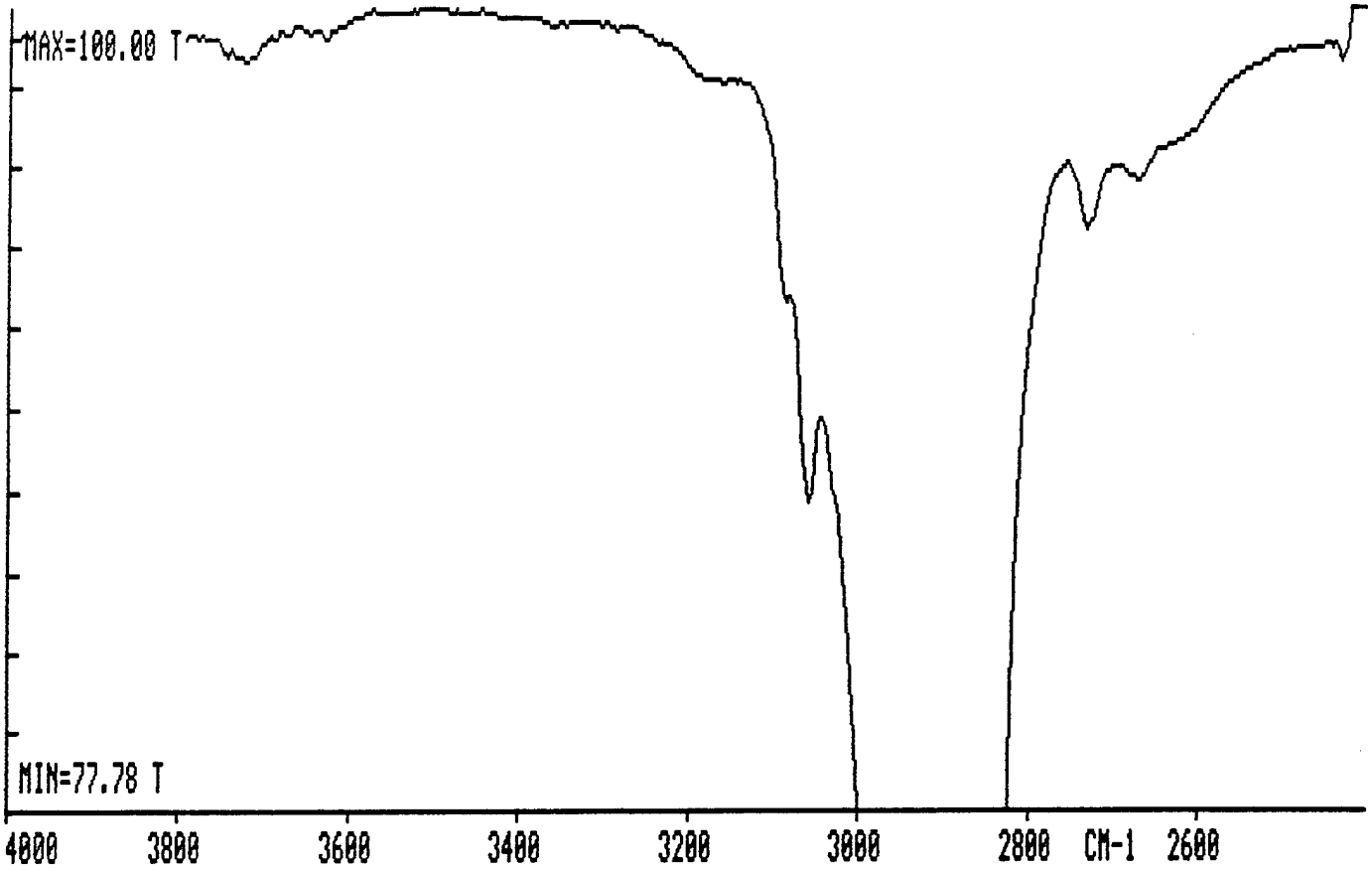

MAX=99.05 T
10ug 9-Methylanthracene in
10mg Fog Oil
MIN=92.40 T
4000
3800
3600
3400
3200
3000
2800
CM-1
2600


MAX=100.00 T
MIN=0.00 T
4000
3800
3600
3400
3200
3000
2800
2600
CM-1
2400



0.01mL Fog Oil
10mg 9-methylanthracene Peaks at 3032, ~~3058~~ 3087
in 10mL Freon

(1000mg/mL Fog oil)



0,01 mL Fog 0:1

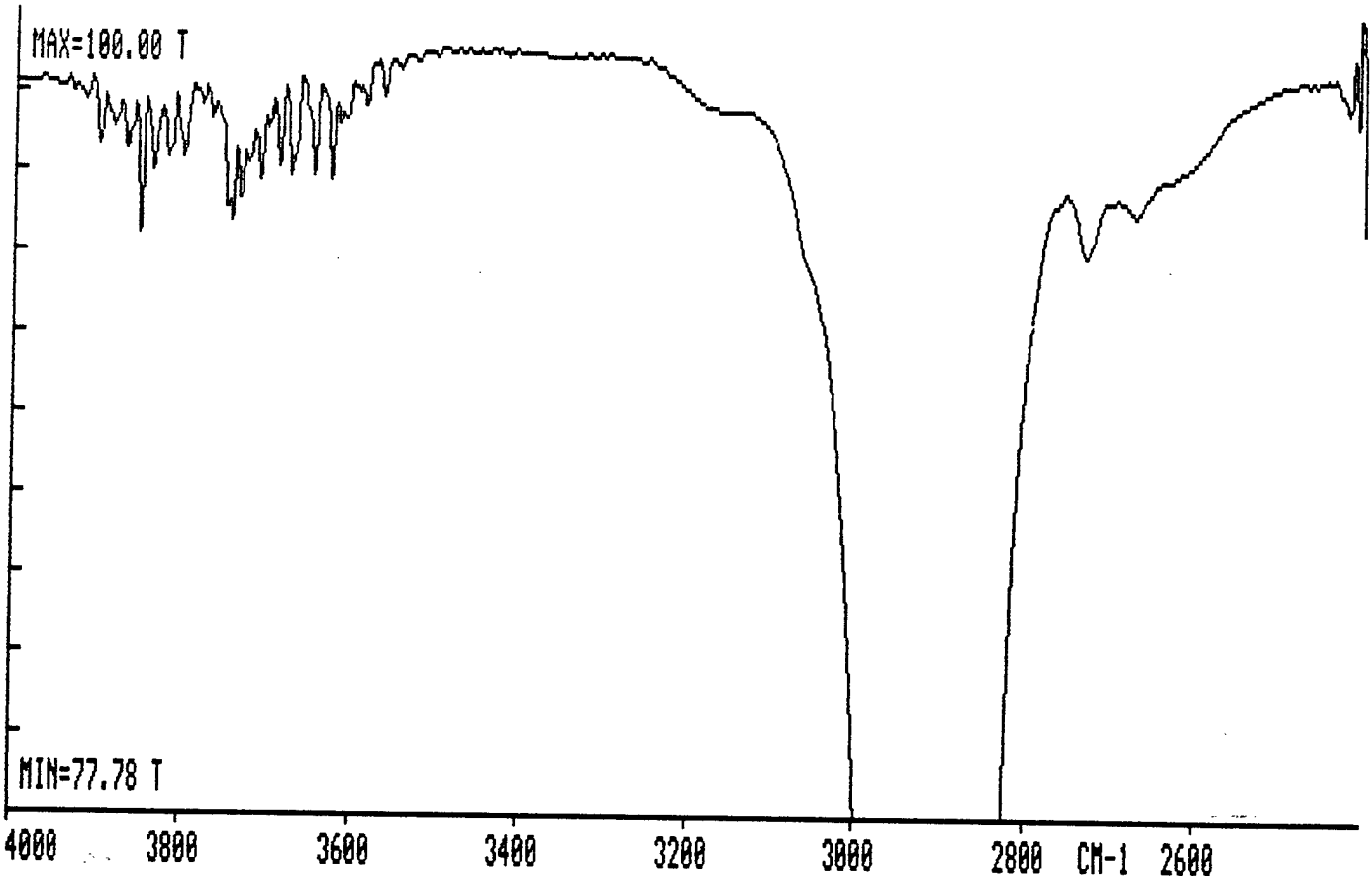
1 mg 9-Methylanthracene

in 10 mL Freon

(100 mg/mL Fog 0.1)

Peaks at: 3058, 3084

3030 (Shoulder)



0.01 mL Fog 0.1
in 10 mL Freon

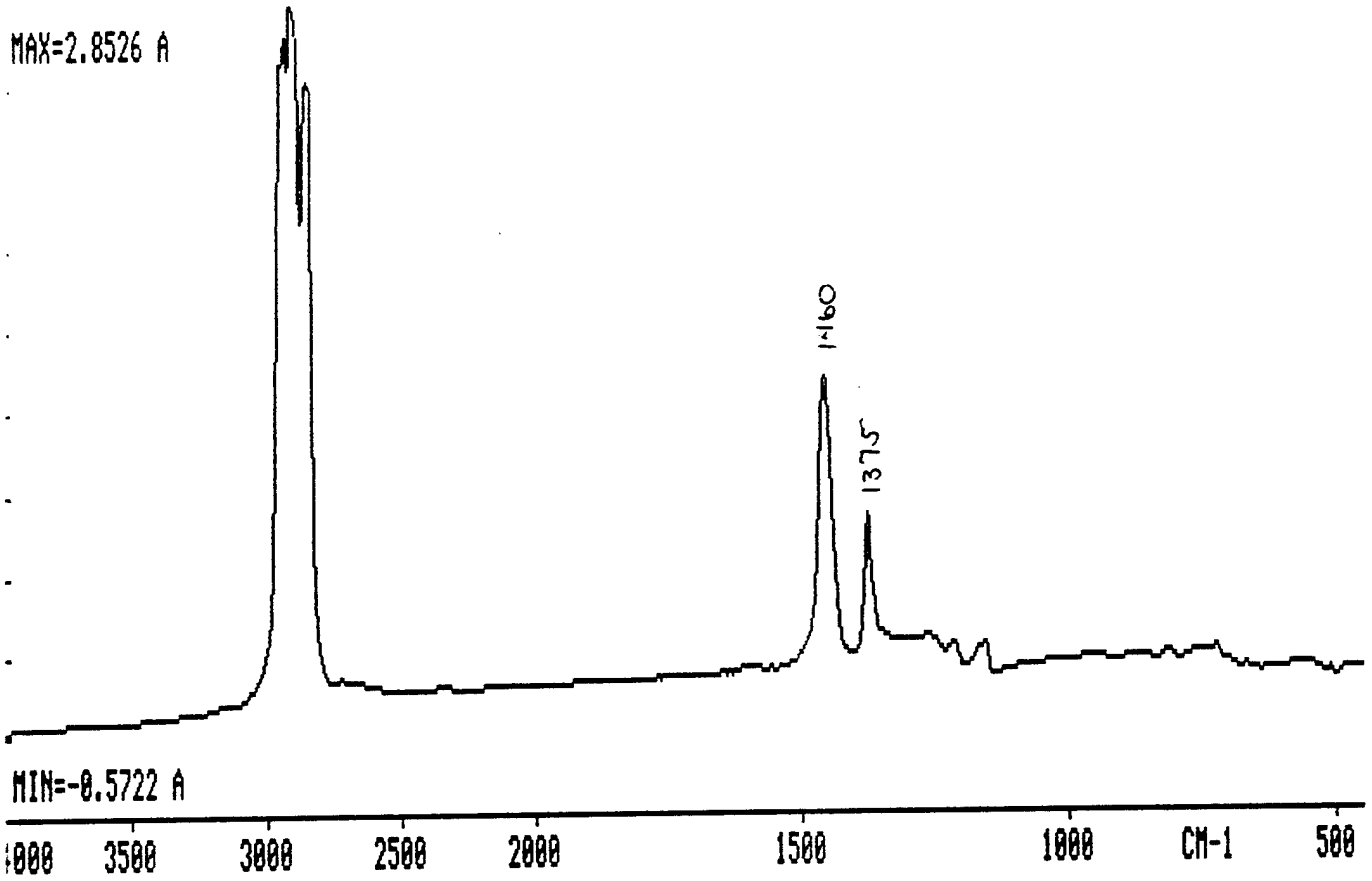


Figure 6 IR Neat Fog Oil on 3m IR card

Figure 5

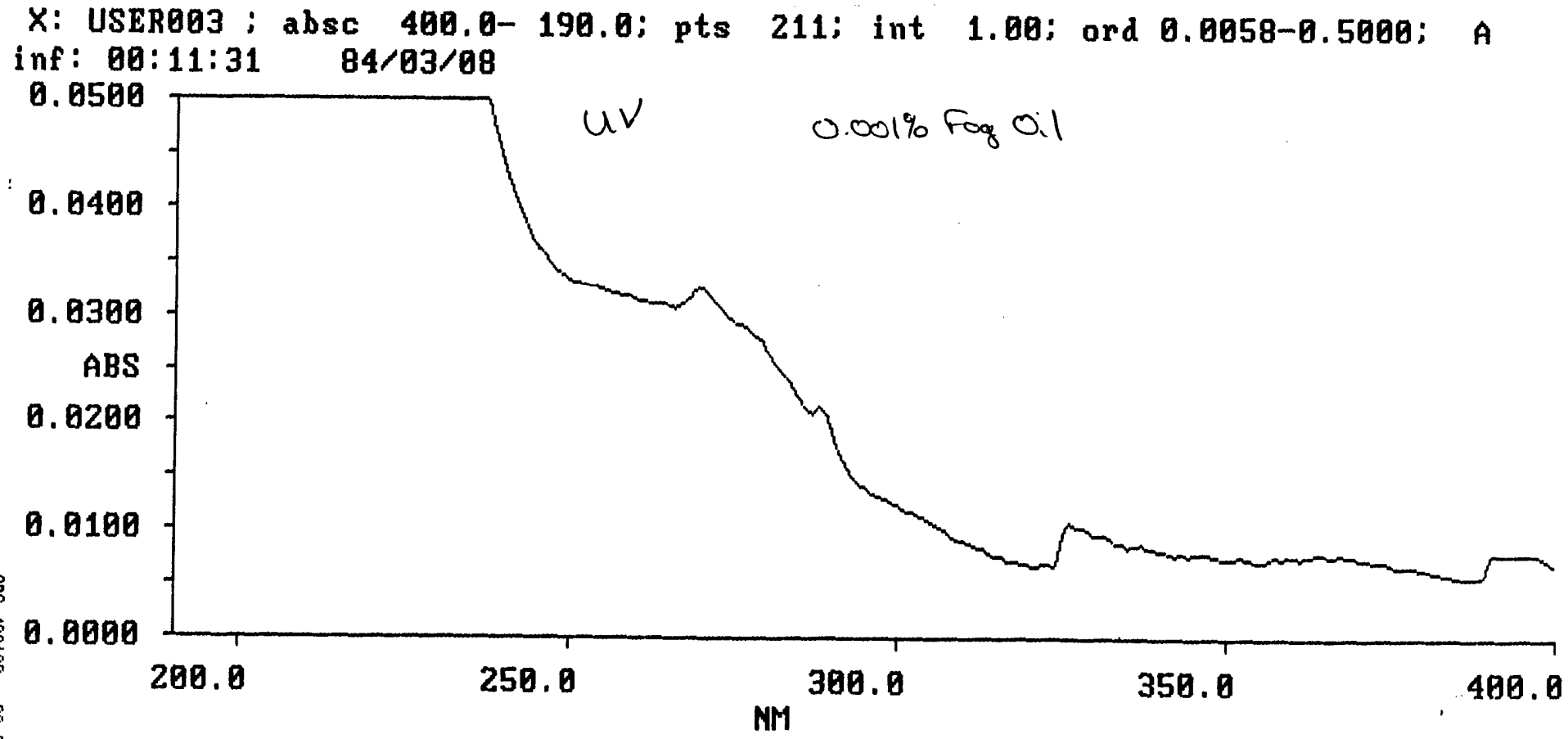
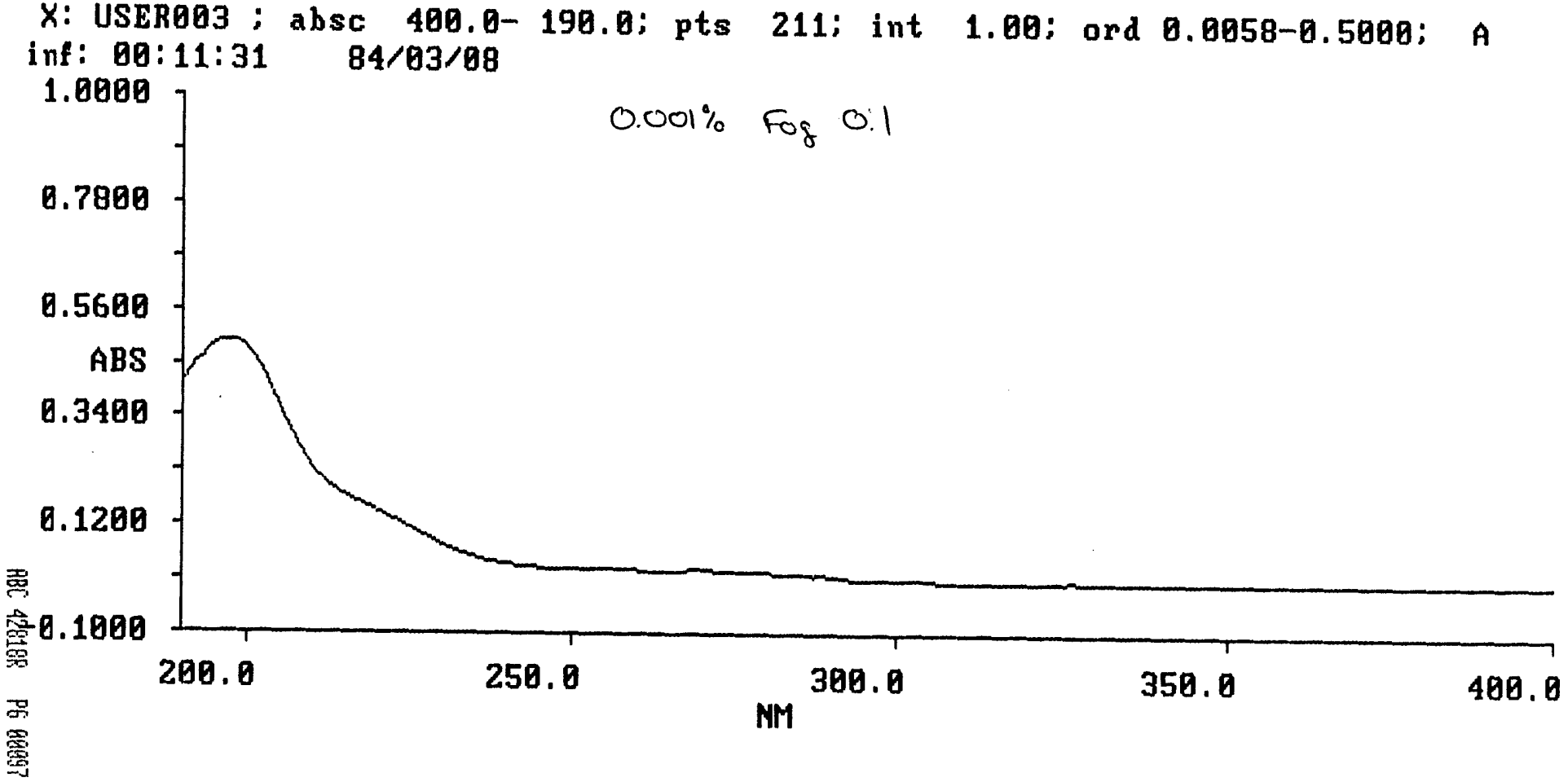
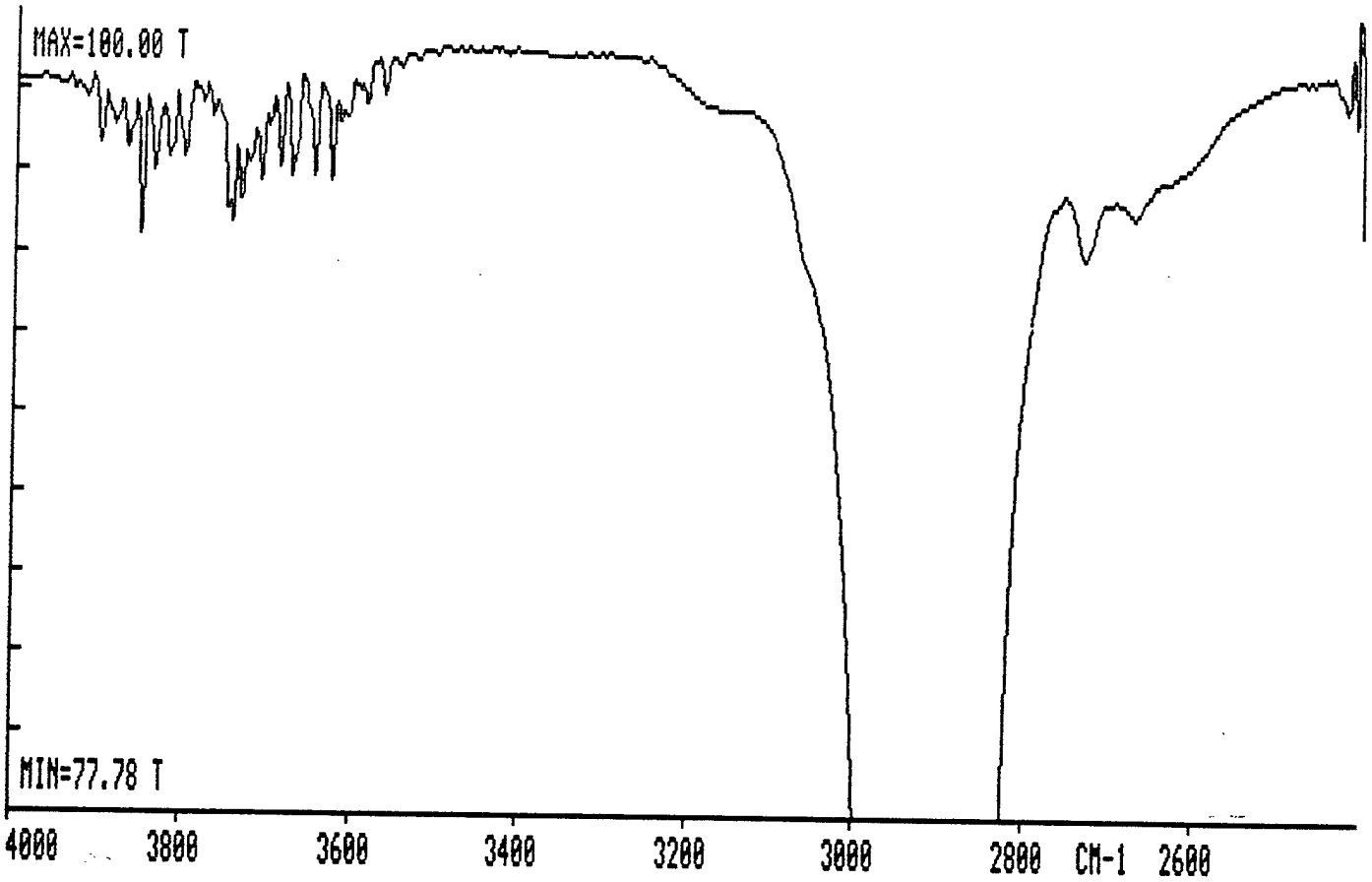

X: USER003 ; absc 400.0- 190.0; pts 211; int 1.00; ord 0.0058-0.5000; A
inf: 00:11:31 84/03/08
0.0500
0.0400
0.0300
ABS
0.0200
0.0100
0.0000
200.0
250.0
300.0
350.0
400.0
NM
UV
0.001% Fog Oil

Figure 4 UV


X: USER003 ; absc 400.0- 190.0; pts 211; int 1.00; ord 0.0058-0.5000; A
inf: 00:11:31 84/03/08
0.001% Fog 0.1
1.0000
0.7800
0.5600
ABS
0.3400
0.1200
0.1000
200.0
250.0
300.0
350.0
400.0
NM
ABC 428BR P6 00057



0.01 mL Fo 0.1
in 10 mL Freon

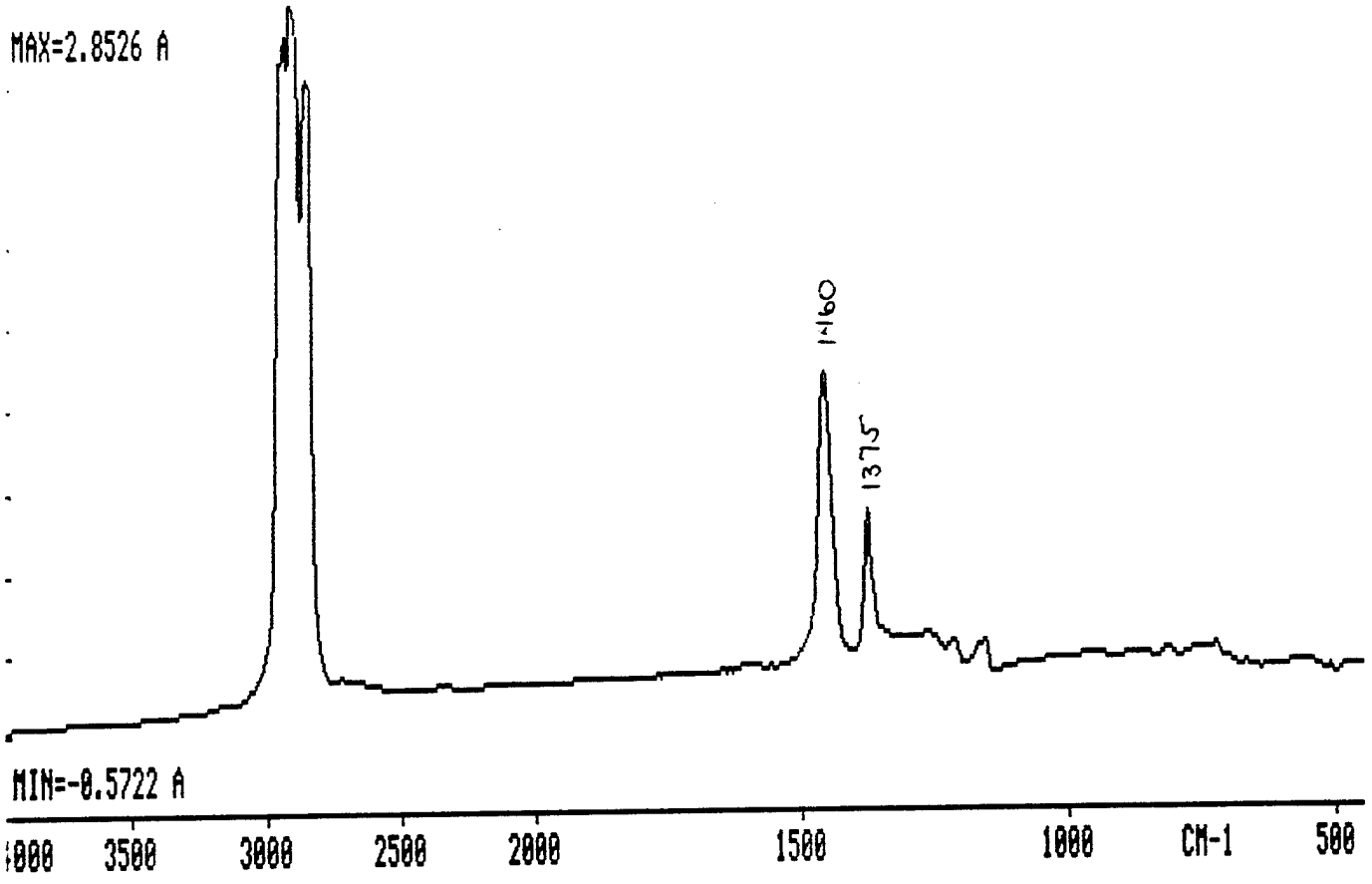


Figure 6 IR Neat Fog Oil on 3M IR card

Figure 3

GC/MSD 1% Fog Oil

Ion chromatogram 75-76 amu
(aromatic ring)

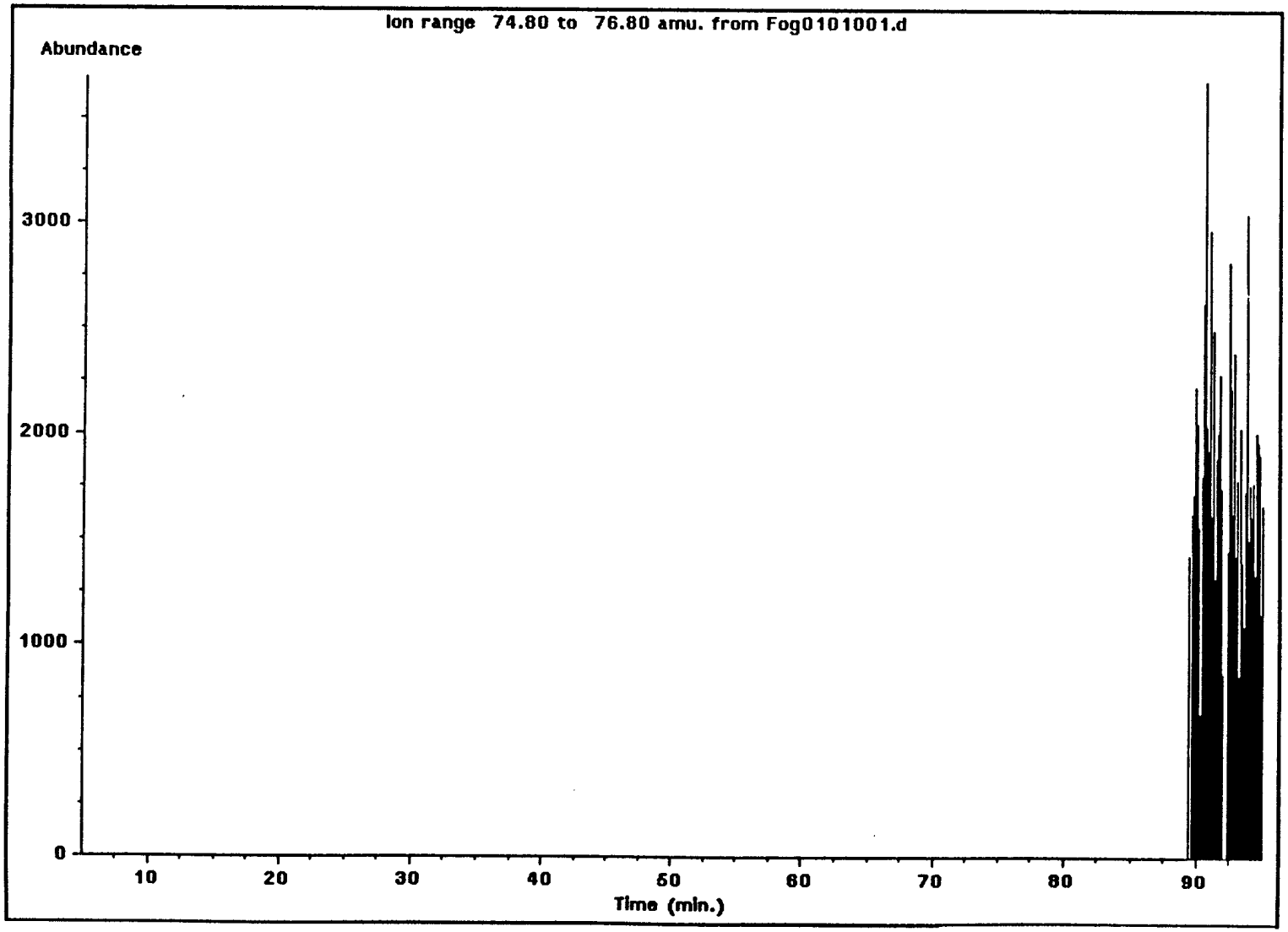


Figure 2 GC/FID of Si cleaned up Fog Oil

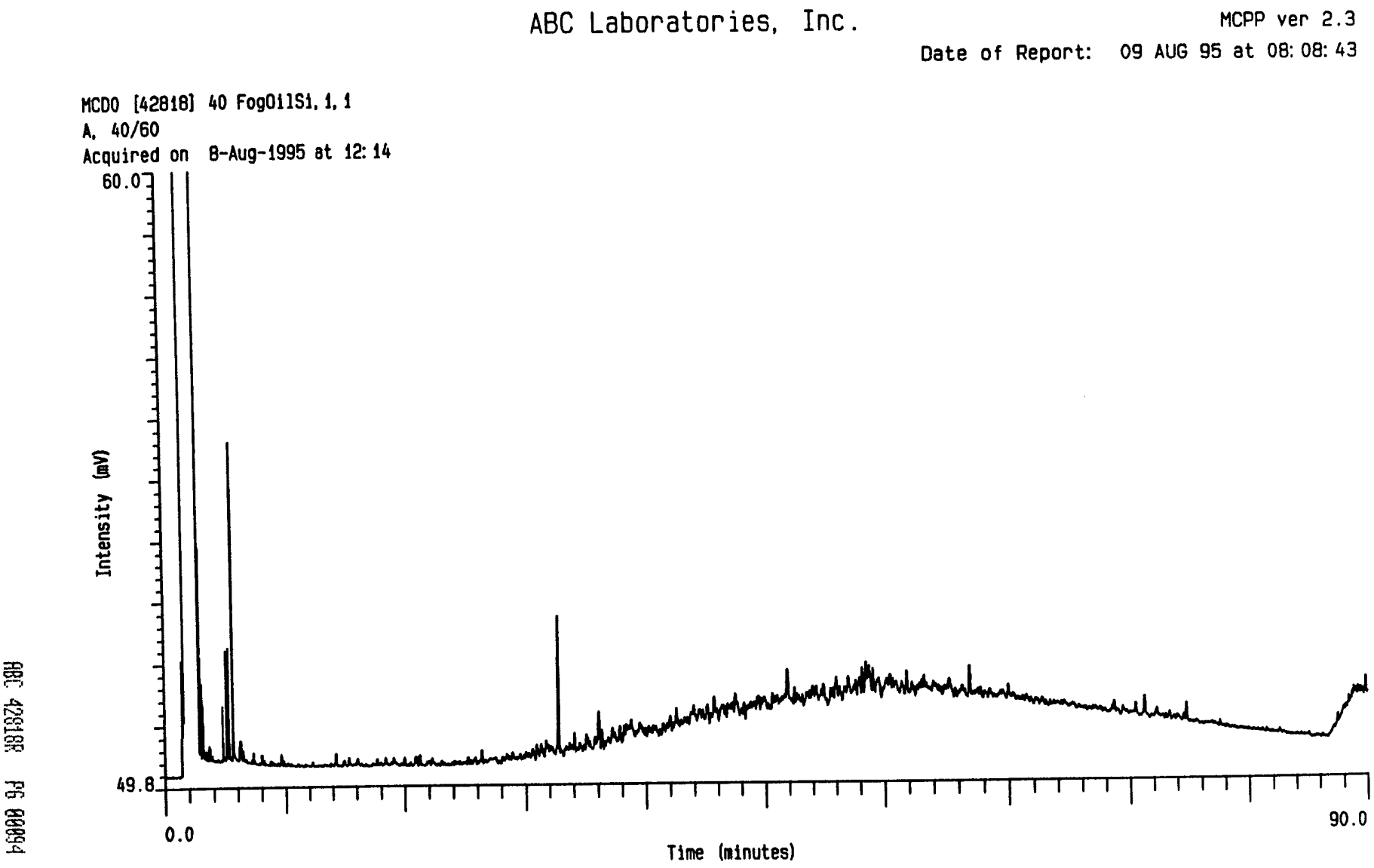
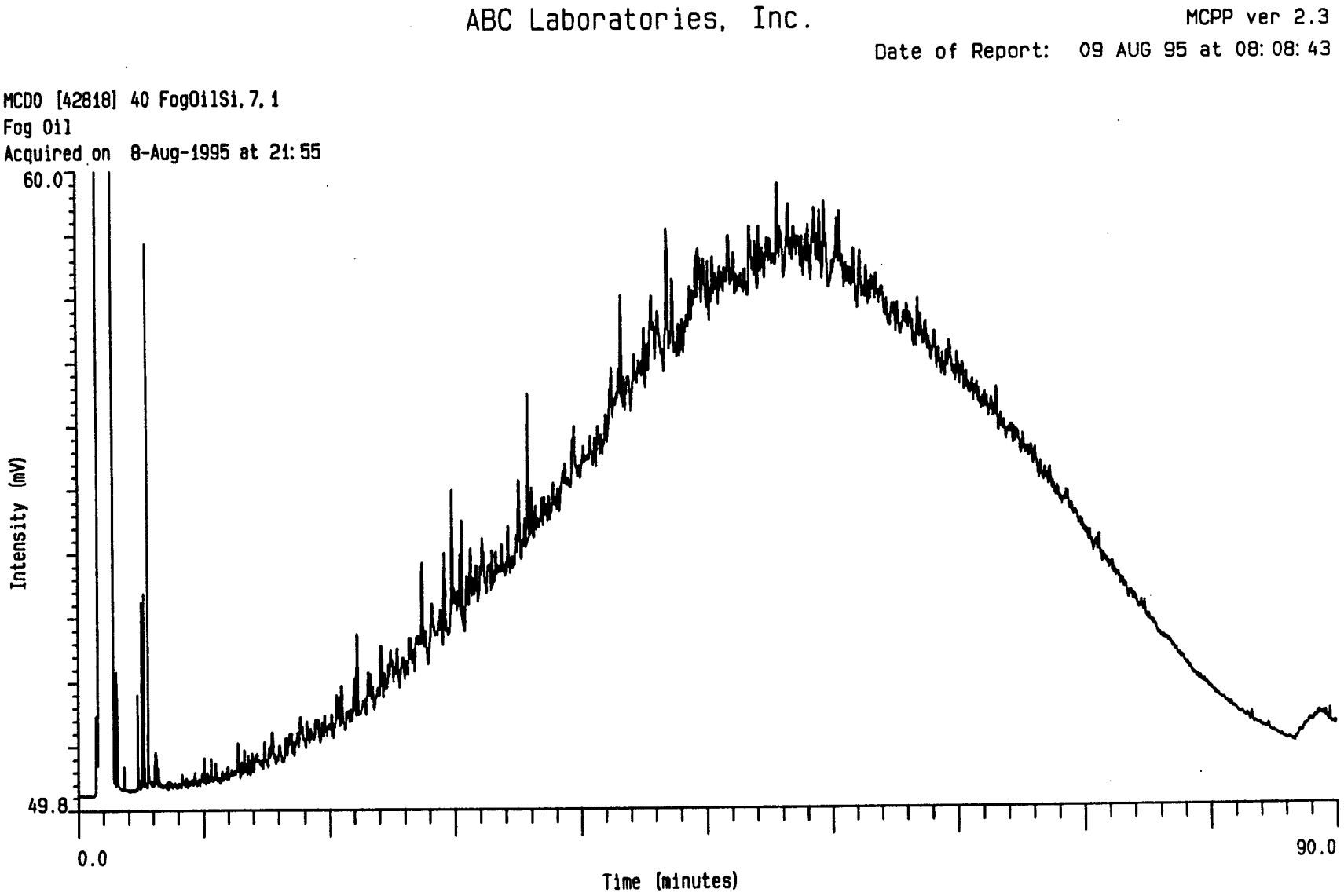


Figure 1 GC/FID of 1% Fog Oil in hexane



ABC 42818 FO 00053

Attempts were made to characterize the fog oil. The parent oil was diluted in hexane to a concentration of 1 %. This was injected on a GC/FID using a DB-5 (Figure 1). The oil was cleaned up using a Si column and the extract injected (Figure 2). The 1 % solution was injected on a GC/MSD and the ion range 75 -76 amu (aromatic ring) was monitored (Figure 3). The absence of any peaks in this mass range indicate there are no aromatics in the fog oil.

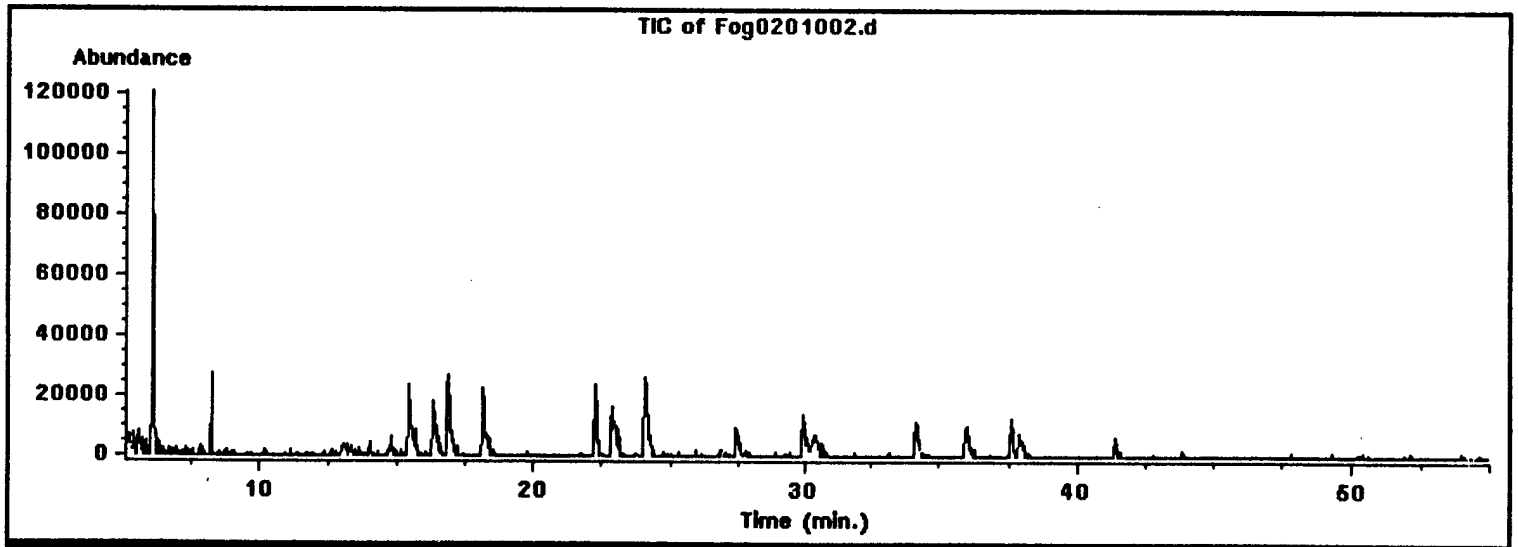
(1) The fog oil was also analyzed by UV. A 0.001 % solution was prepared and scanned from 200 to 400 nm (Figures 4 and 5). The lack of an absorbance peak ~ 250 nm indicates there are no aromatics in the fog oil.

(2) Finally the fog oil was analyzed by IR. The neat fog oil was placed on an IR card (Figure 6). The triplicate peaks at 2850 - 2960 cm^{-1} as well as the 2 peaks at 1375 and 1460 cm^{-1} are characteristic of alkanes. There are no peaks at 3000 - 3100 cm^{-1} (aromatic) or at 3020 - 3080 cm^{-1} and 1640 - 1680 cm^{-1} (alkenes). This indicates that there are no aromatics or alkenes in the fog oil.

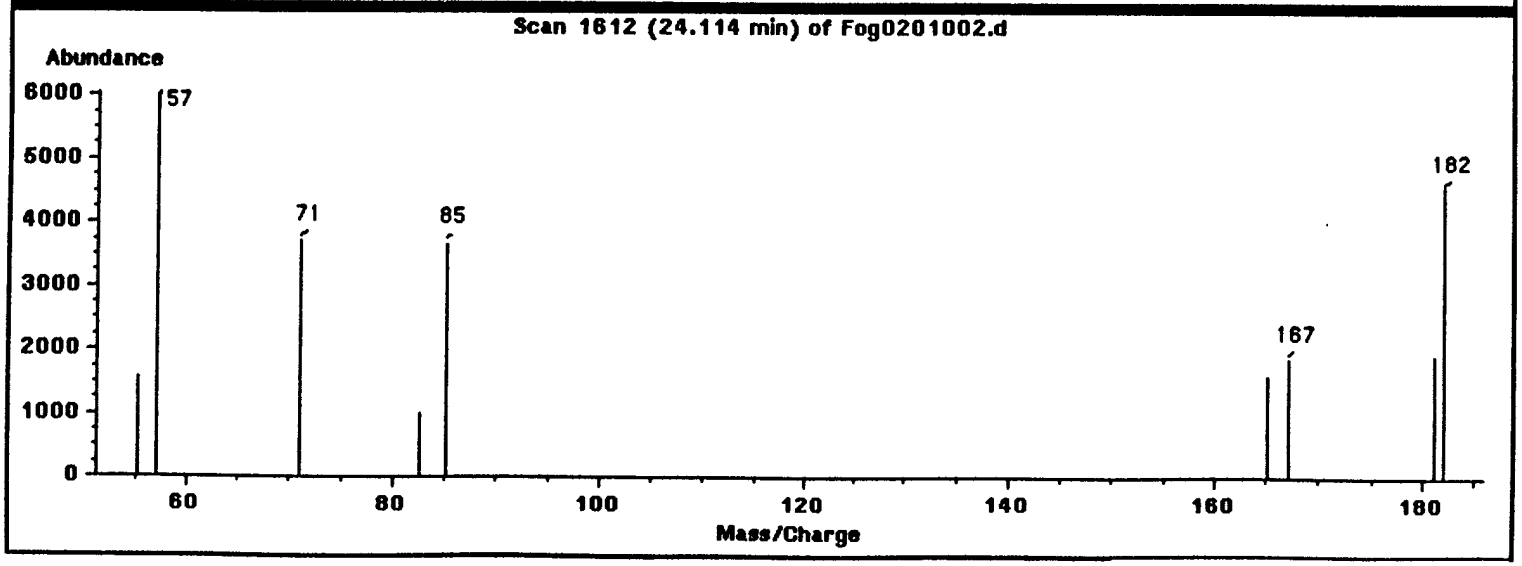
Based on the above preliminary studies, it appears there are no aromatics in this fog oil sample. Further studies need to be done to determine detection limits.

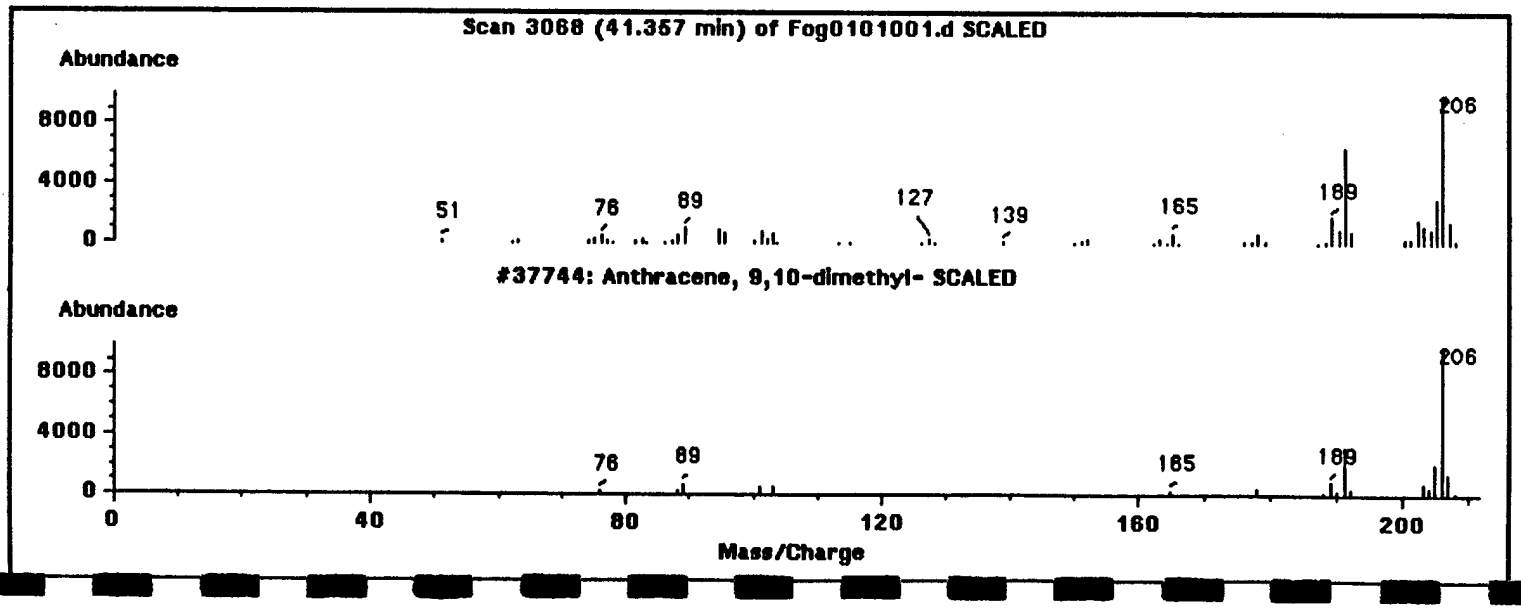
(1) See Appendix IV

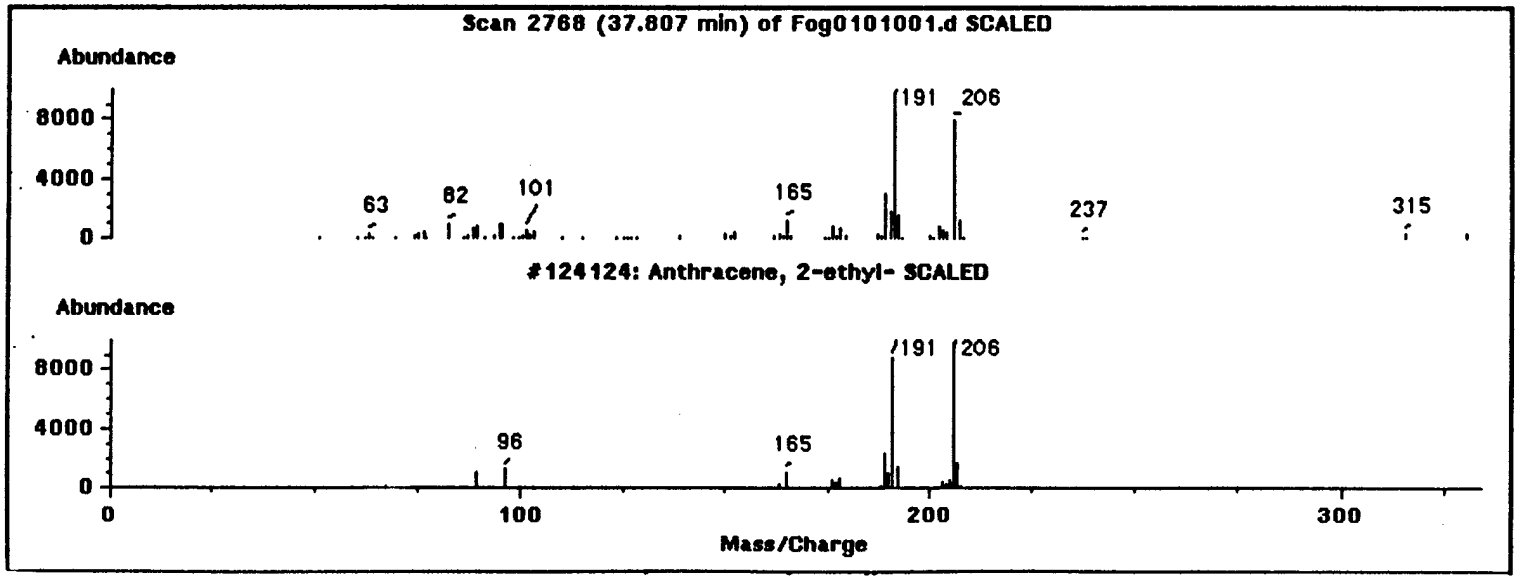
(2) See Appendix V

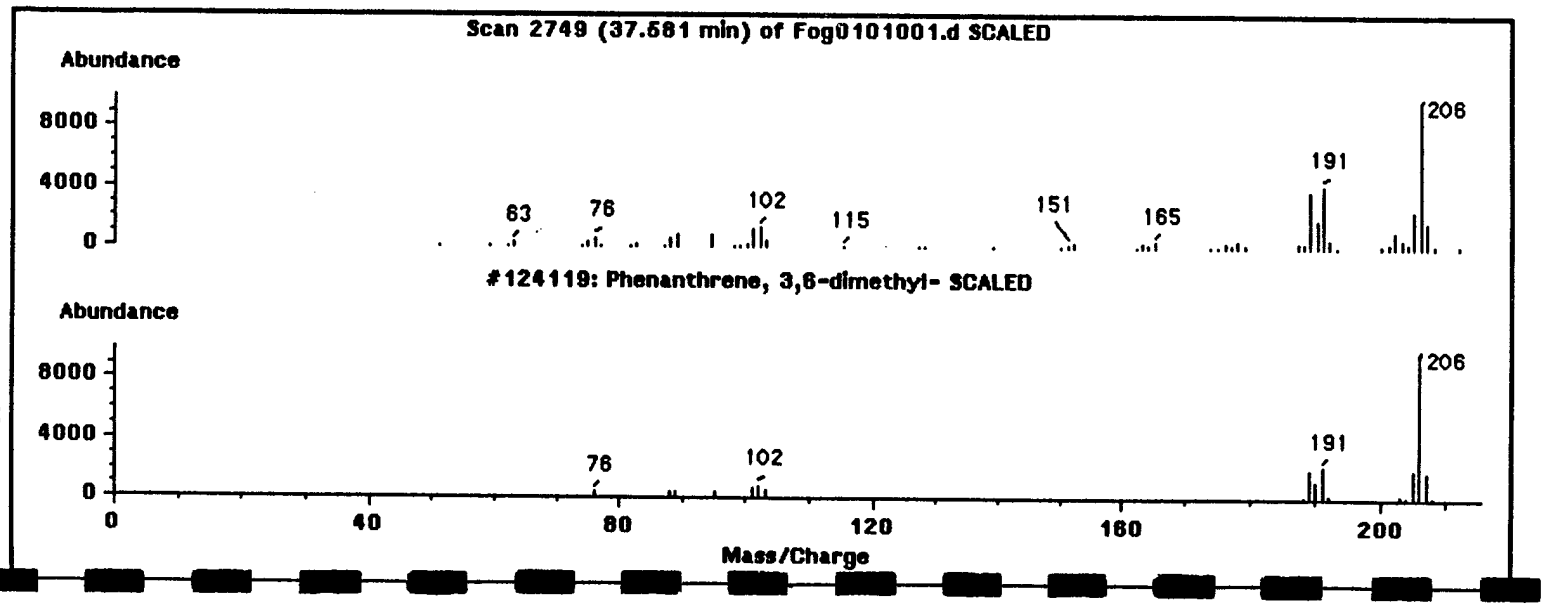


1ug/ml PAH's




Scan 3068 (41.357 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
51
76
89
127
139
165
189
206
#37744: Anthracene, 9,10-dimethyl- SCALED
Abundance
8000
4000
0
76
89
165
189
206
0
40
80
120
160
200
Mass/Charge


Scan 2768 (37.807 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
63
82
101
165
191
206
237
315
#124124: Anthracene, 2-ethyl- SCALED
Abundance
8000
4000
0
96
165
191
206
0
100
200
300
Mass/Charge


Scan 2749 (37.581 min) of Fog0101001.d SCALED
Abundance
8000
4000
0
63
76
102
115
151
165
191
206
#124119: Phenanthrene, 3,6-dimethyl- SCALED
Abundance
8000
4000
0
76
102
191
206
0
40
80
120
160
200
Mass/Charge